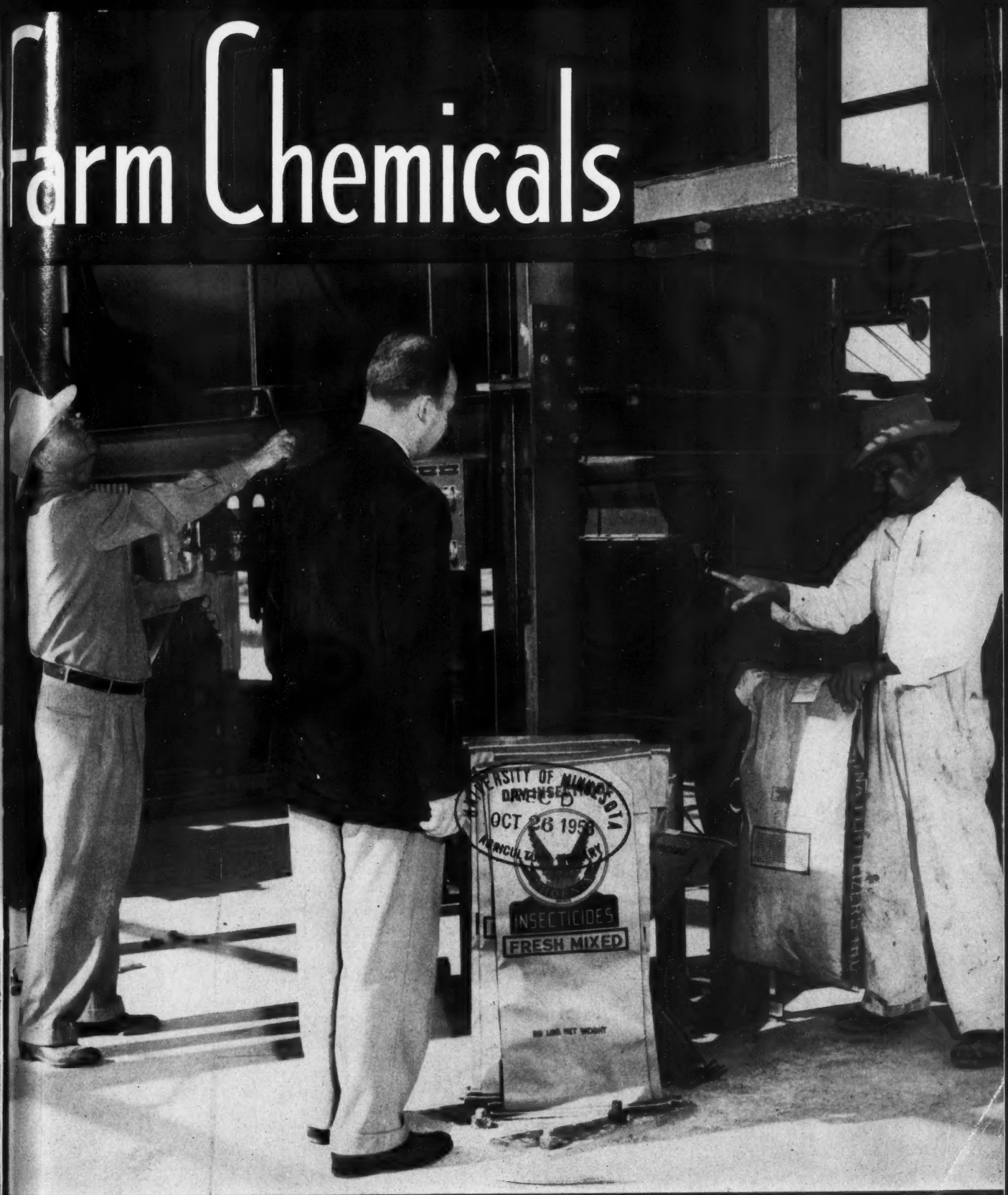
rm Chemicals



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A-N-L* Nitrogen Fertilizer

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*Trade mark of Allied Chemical & Dye Corporation

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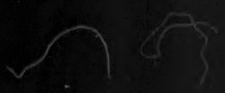

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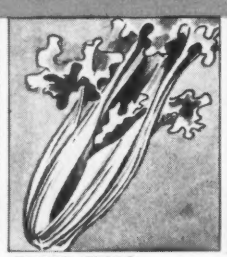

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In this issue . . .

When a record-breaking number of delegates (more than 500) got together at Spring Lake, N. J., last month to celebrate the 20th anniversary of the National Agricultural Chemicals Association, they had a lot to talk about. Speeches and lobby conversations shuttled between the last two decades and the uncertain future of the industry. The present poor profit picture also came in for its share of discussion. For our picture story covering the convention, turn to page 11.

The already booming field of anhydrous ammonia for agriculture is getting another boom—off-season application. There is good scientific backing for the recommendation, 14 authorities having given the movement support last season. The feature on page 17 gives highlights of the trend, and recommendations of the Agricultural Ammonia Institute.

Safety in the fertilizer industry is a field that needs attention every day of the year if it is to be successful. Modern safety rules and methods that will help manufacturers conduct their operations more safely will be offered to industry representatives on Oct. 21 and 22 in Chicago. For full details and the program schedule, see the article starting on page 18.

Attention at the annual NAC meeting last month, described in general in the feature on page 11, was focused on the excellent panel which aired the problem of fertilizer-pesticide mixtures for joint application. As a service to NAC members and for interested fertilizer manufacturers, FARM CHEMICALS is publishing complete texts of the talks given by the five panel members. Page 23.

Expanding operations in fertilizer plants to include production of pesticides is a fairly common practice in the industry. Read how one typical fertilizer company, Arizona Fertilizers, Inc., went about it in the feature on page 35.

Use of agricultural limestone in the United States dropped one per cent last year from the total for 1951, but the amount still was tremendous: 27,252,045 tons being applied, according to the National Agricultural Limestone Institute. For a state-by-state breakdown, turn to page 38.

The regulation of fertilizers and pesticides is a big job. The state control officials, who are charged with the responsibility of checking on analysis and labeling of the chemicals, will discuss their activities and problems during the week of Oct. 12–17 in Washington. Story on page 41.

Use and abuse of generic names for pesticides is a technical subject that ought to be studied closely by industry members. See the report on page 45.

To aid the cause of safety the Fertilizer Section of the National Safety Council is seeking data from industry members via a questionnaire. Story on page 49.

farm chemicals

Formerly
American Fertilizer & Allied Chemicals
Established 1894
PIONEER JOURNAL OF THE FARM CHEMICALS INDUSTRY

Vol. 116 **OCTOBER, 1953** **No. 10**

Contents

Briefly Noted 4
NAC Convention 11
NH_3 for Fall Use 17
Fertilizer Safety Conference 18
Fertilizer-Pesticide Panel 23
Arizona Fert. Pesticide Unit 35
Ag. Limestone: 1952 Consumption 38
Control Officials To Meet 41
Pesticide Names 45
Fert. Safety Questionnaire 49
Market Letters 51
Industrial News 55
Editorial 76

Cover Story

M. F. Wharton, left, technical director of Arizona Fertilizers, starts first run of insecticide grinder at new plant while E. H. Karr, center, of Pennsalt, watches the worker preparing to bag the material. Karr assisted Wharton in designing the unit. *Story, page 35.*

A magazine international in scope and circulation and devoted to manufacturers, mixers, and formulators of fertilizers and pesticides

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farm chemicals facts

. . . Briefly Noted

James A. Wilson is new production manager of International Minerals & Chemical Corp.'s Chemical Phosphates department in Florida.

Wilson

Wilson has had broad experience in chemical processing and plant operations. In his previous position he served as production manager of Monsanto Chemical Co.'s Merrimac division at Everett, Mass. He holds a B.S. in Chemistry from Clemson College and his engineering education includes postgraduate work at Massachusetts Institute of Technology.

John W. Yale Jr. and George Barnes have joined the agricultural development program of Mathieson Chemical Corp. Dr. Yale will make his headquarters at Whittier, Cal. and Dr. Barnes at Ohio State Research Foundation, Columbus. Both men received Ph.D. degrees in plant pathology from Oregon State College in June.

Died: Julius W. Rassell on Aug. 26. He had been associated with his father in Nicholas Rassel & Sons Co., which now is Darling & Co.

The Fertilene Corp. of America has appointed Dan J. Stone assistant to the president in charge of advertising and sales promotion.

A working model of Grace Chemical Co.'s new $19 million plant, now under construction near Memphis, is one feature of a special exhibit at the New York Stock Exchange.

Jack C. Bever and Dwain Richey have joined The Frank G. Hough Co. as district representatives. Bever will operate in the District of Columbia, Maryland, Virginia, West Virginia and the Carolinas and Richey in Arkansas, Louisiana, Oklahoma, Texas and New Mexico.

New manager of Chase Bag Co.'s Toledo plant is James F. Porter. Prior to his appointment, he was in the Engineering department of Consolidated Gas & Electric Co. and served as assistant manager of Brooklyn Cooperage Co.'s Carton division.

W. R. Donaldson has been named assistant to the general manager of the industrial chemicals division, American Cyanamid Co.

Wyandotte Chemicals Corp. has promoted two men in its Michigan Alkali division to managerial positions. Walter L. Rippeteau has been named general product manager of organic chemicals and Charles F. Gerlach, general product manager of inorganic and agricultural chemicals.

Mid-State Chemical Supply Co. has been purchased by California Spray-Chemical Corp. as part of the expansion program of Cal-Spray. The company has acquired 34 new plants in 20 states, territories and countries and produced 300 new farm products since World War II.

CALENDAR

Oct. 7—Fall meeting for Fertilizer Mfrs., U. of Ky., Lexington.
Oct 12–14—Assn. Offic. Ag. Chemists annual meeting, Washington, D. C.
Oct. 16—Assn. Amer. Fert. Cont. Officials annual meeting, Wash., D. C.
Oct. 17—Assn. Econ. Poisons Cont. Officials annual meeting, Wash., D. C.
Nov. 4–5—Pacif. N. W. Plant Food Assn. annual conv., Harrison Hot Springs, B. C., Canada
Nov. 9–10—Cal. Fert. Assn. annual meeting, Carmel, Cal.
Nov. 16–18—NFA fall meeting, Atlanta, Ga.

Glenn Gullikson has been named supervisor of Dow Chemical Co.'s newly created Product Education and Merchandising section of the Agricultural Chemicals Sales department.

Gullikson

Gullikson joined Dow in 1948 as a salesman in Minnesota and the Dakotas. Prior to that he had been county agricultural agent of Big Stone County, Minn.

Increased growth of Dow's overall line of agricultural chemicals made necessary formation of the new section to provide the department with specialized services.

Universal Detergents, Inc. has named two new sales agencies, Donald McKay Smith, Inc., of Cleveland, O. and Emmet D. Griffin Jr., of Pittsburgh, Pa., as its representatives.

Safety was the theme at a series of banquets held last month by Fulton Bag & Cotton Mills for its employes in recognition of their outstanding safety record. Officials report the company's safety contest program, initiated two years ago, has made not only a substantial reduction in the accident rate, but has stimulated production throughout the plant.

Karr & Co. has moved to 923 East Broad St., Columbus, O. Larger headquarters were needed, according to the company, because of its expanded business.

C. E. Hayward has been appointed western division representative for Universal Detergents, Inc. Formerly he was associated with the Industrial division of Purex and Wyandotte Chemicals Corp. Universal Detergents also has opened an eastern sales office in the Graybar Building, New York City, headed by F. H. Guernsey, eastern sales manager.

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Bagpak quality is a result of a quarter century of making multiwall bags for practically every major industry in the country. More than four hundred products ranging in cost from a fraction of a cent to dollars a pound are confidently and profitably packed in Bagpak Multiwalls.

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Up to four color, high quality printing.
Top Quality Paper—*complying with Fed Specs. U U-S 48 b.*
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Range of sizes from 25 lbs. to 110 lbs. *For light insulation materials, up to 7 cu. ft. capacity.*
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Air view showing dryers and rock storage at Pierce, Florida, headquarters of A.A.C. phosphate mining operations. (Top) Sample of Florida Pebble Phosphate Rock, source of phosphorus widely used in the chemical industries, in its elemental form as well as in phosphoric acid, phosphates and phosphorus compounds. Q This pebble rock is also the principal source of the most important—and most generally deficient—plant food element. Often called the Key to Life, phosphorus is essential in maintaining and improving crop yields. Health, growth, life itself, would be impossible without phosphorus . . . so in a way these phosphate pebbles are more precious than gold.

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All grades of Florida Pebble Phosphate Rock **AA QUALITY Ground Phosphate Rock**
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Gelatin **Bone Products** **Salt Cake** **Ammonium Carbonate**
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THE AMERICAN AGRICULTURAL CHEMICAL COMPANY

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30 FACTORIES AND SALES OFFICES, SERVING U.S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

Farm Chemicals

Washington Report

By Fred Bailey & John Harms

Administration's new farm program is to be favorable to the chemical industry despite the trend away from high price supports. While the entire program has not yet been made public, it now is obvious that the program is to stress activities which in effect will in the long run enhance sales of pesticides and fertilizers.

Emphasis is to be on research and education. These are what Agriculture Secretary Benson calls "the backbone of any long-range program for a sound economic position for agriculture."

The program is to feature five other elements: Price supports, crop adjustments, conservation, credit and foreign trade. The Administration is reasonably enthusiastic about conservation and more than mildly interested in expanding foreign markets. And credit isn't a big worry.

While price supports aren't to be lowered next year, the new theory is that as farmers use more research for better production and marketing the need for high price supports will diminish. Farmers are to be weaned off of high, rigid supports for the "basic" crops (corn, wheat, cotton, peanuts, rice and tobacco) . . . gradually.

Land Grant Colleges, Extension Service and the Experiment Stations are to be boosted to the premier spot in programs serving farmers. As Benson sees it, they will carry the big load in the new farm program. The big Production and Marketing Administration, which Benson believes has been more or less of a farm dictator, is to be stripped of most of its power and authority.

Farm research on the state level is to be encouraged more . . . and plans call for a greatly expanded Extension Service as the main farmer contact outfit for spreading the word about latest research developments. Benson will push for expansion of the Extension Service primarily through additional workers in most counties.

Private industry is to be asked to assume a bigger role. Benson is convinced that "we need a greatly expanded technical liaison service between research and industry . . . as a counterpart to the extension program for carrying production research to farmers." This will provide an opportunity for industry to funnel salable new developments directly to the farmer through contacts with Extension people.

Benson affirms his faith in what research can do for agriculture in a recent policy statement. He says: "If we are to look forward to continuing progress it is necessary to provide more adequately for research in those fundamental sciences upon which agriculture rests. This is the source of new principles for the further improvement of our soils, plans and livestock."

Major farm organizations and many prominent farm state congressmen are supporting this approach to the "farm problem." But where Benson may run into trouble is on the details. They will have to be "right" politically if Congress is to give Benson the support he will need to put it across.

It is pretty certain, however, that Benson's stress on research and education is to become a permanent part of any new program. It hasn't been publicized, but

President Eisenhower's younger brother, Milton, president of Pennsylvania State College, supports this approach and is behind the move to provide more prestige and responsibility for the Colleges and Extension.

With the White House backing this approach, there is assurance that the new emphasis on research and education will continue under the GOP regardless of any change in the farmers' cabinet office. Farm state congressmen, who want to be re-elected in 1954, are pressing for Benson's removal . . . say he has lost the GOP too much ground in the critical Midwest.

Conservation is to be pushed under the new program, although Benson so far has avoided saying much about it. The part the Soil Conservation Service and the conservation Districts will play is to be defined by Congress under special legislation this winter.

But the tip-off on where conservation, with its limiting programs, etc., stands comes from the White House in a little-noticed message on the last day of Congress. President Eisenhower stated: "Conserving and improving our land and water resources is a high priority business for all of us. It is the purpose of this Administration to present to the next session of Congress suitable recommendations for achieving the objectives set forth in this message. As Congress moves ahead on a constructive legislative program in the resources field, it will have my full support and co-operation."

The place for the agricultural conservation program--with its $195 million subsidy--also will be decided in the next session. Chances are that Benson will avoid making an issue of it again . . . after his rebuke from the agriculture committees in the past session. You can expect Congress to continue next year's program at about the current level.

Industry contacts with the Agriculture Department will be juggled considerably by the forthcoming reorganization. A tentative plan has been drawn up, but the details still were being shifted as we went to press.

The big change, however, will be this: The many agencies within the Department will be re-grouped into FUNCTIONAL units . . . instead of on a commodity basis as now. So, instead of dealing with one USDA agency on any particular crop, farmers and industry people will be obliged to visit various offices for information. The functional set-up is preferred by present officials because of reputed ease of administration.

While the few copies of the reorganization plan are locked and guarded, we are able to give you this much: The reorganization re-groups the agencies into four administrative units. These are: Administration, including personnel, budget, information, production and the Commodity Credit Corp.; Research, comprising all Agricultural Research Administration offices, plus the Bureau of Agricultural Economics; Regulatory, including Commodity Exchange Authority, insecticide registry, meat inspection, etc.; and Cooperative Services, including Extension, Office of Experiment Stations, and other agencies dealing with the States.

That, at least, is the way the plan looked after birth in a Department back-room. It can change before it is put into operation . . . and details likely will change . . . so you'd better wait for a closer look before placing any bets.

Federal controls on production of wheat, corn and cotton will remove more than 30 million acres from production of these crops in 1954. Federal and State farm agencies will persuade farmers to turn them into production of crops not likely to be in surplus.

But removal of these acres from producing big fertilizer consuming crops, such as cotton, is not expected to cut down on farm demand for plant foods. Cotton growers, for instance, very likely will increase their purchases of fertilizer . . . or at least maintain present buying levels . . . to obtain bigger yields per acre to make up for lost acreage. Wheat and corn growers likewise are likely to up their fertilizer consumption . . . as well as protect their limited crops with more pesticides.

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From Lip to Cup...

Enough to make the difference

In many a championship match, after more than 140 equal strokes, the winner is decided by a margin from lip to cup — enough to make the difference.

With multiwall sacks, too, strong contenders are matched to supply your needs. Yet there are differences between their services and their sacks which, taken individually, may be small. But over the whole course they can save you strokes — enough to make the difference.

If you haven't checked on your packing and shipping recently, do so now when the squeeze is on your profits between rising costs and lower selling prices. You will find the extra points which Hudson can give you make tangible savings — enough to make the difference.

EXTRA POINTS for Hudson

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—a 39-point inspection and test program.

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HERE'S ONE EXTRA POINT FOR YOUR PRODUCT'S SALES APPEAL

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Sharp, forceful presentation of your product identification and selling message on the multiwall sack makes a difference in the display values and sales appeal of your product. Hudson's sack printing plant, most modern in the industry, can make the difference in your product's appearance.

If your present sack design puts you at a competitive disadvantage, a new one can be developed for you by Royer & Roger, Inc., the industrial design organization whose exclusive services Hudson makes available to you without charge.

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Is a 100-100-100 formula... *impossible?*

Such a mix is fantastic for fertilizer but a 100% formula is possible when you are talking about multiwall sacks for the fertilizer industry.

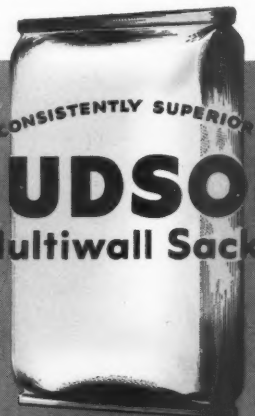
Hudson's 100% *integration* – from seedling to sack – means a more uniform multiwall sack. The 100% completely *modern production line* and the 100% checking and *inspection program* assures you that Hudson Multiwall Sacks are uniform, strong and resistant to damage. It's *enough to make the difference!*

Hudson gives you a 100% *guarantee,* in writing, that you will use 100% of the multiwall sacks you purchase. Even so-called "normal breakage" is covered by the Hudson guarantee. And if you are looking for a *sack design,* the services of Royer & Roger, Inc., a 100% industrial design organization, are available to you. The design you select will be reproduced with the utmost accuracy on Hudson's 100% modern, *new sack printing equipment.* It's *enough to make the difference!*

Hudson offers you 100% service on *delivery schedules* – the integrated operations gives assurance that supplies are always available – as well as storage and inventory control problems. Specially trained *specialists* are available to you to help you solve *"problem product" packaging* and to help you iron out any bottlenecks in your packaging process. It's *enough to make the difference!*

Check over this list of 100% services that Hudson Multiwall Sacks offer you.

Mail the coupon on the other side of this page for complete information.



At Spring Lake Convention . . .

Attendance Tops 500 At NAC Anniversary

A very limited number of extra copies of the September FARM CHEMICALS, *containing a special section on the history and activities of the National Agricultural Chemicals Association, are available to interested readers at 25 cents a copy.*

By Hamilton C. Carson
Managing Editor

OFFICERS and members of the National Agricultural Chemicals Association took a good look at the past 20 years in the pesticide industry at the record-breaking meeting in Spring Lake, N. J. last month, but they didn't fix their attention backward permanently.

They concerned themselves with the present crucial period in the mushrooming industry and the unfavorable profit picture that dominates it, then took a look at what the future may bring.

To be sure, there was plenty of reason for recounting the success of the NAC during the past 20 momentous years at this big anniversary meeting, but the delegates didn't revel long in past triumphs, nor dwell at length on past failures.

Fertilizer-Pesticide Mixtures

They were too busy trying to find some solution to the complex enigma of fertilizer-pesticide mixtures and other problems that will shape the future course of the pesticide industry and the NAC.

The association has jumped in membership from 23 to 140 during the two decades of its existence, and attendance at association meetings has had a concomitant rise.

That's why representation at the sessions held Sept. 9–11—which totaled more than 500 from all parts of the country—came as no real surprise to those who have been attending these meetings in recent years.

Highlighting the meeting was the aforementioned panel on pesticide-fertilizer mixtures and technical reports on fungicide research, pesticide registration and the work of the Food and Drug Administration as it relates to pesticide manufacturers.

Delegates also heard reports from NAC officers, a talk on trade associations, advice on merchandising pesticides and the first report to the organization by a member of President Eisenhower's cabinet.

First to take recognition of the anniversary connected with the meeting was President Arthur W. Mohr, president of California Spray-Chemical Co., who described the steady growth of the organization during the 1930's and through the war period.

He said that since that time "it has been almost phenomenal."

Technological Gains Cited

The association head said the "tremendous technological development since the war has almost completely revolutionized the pesticide industry.

"It is estimated that between 80 and 90 per cent of our 1953 business is built around new chemicals, not a pound of which was available in 1945.

"The complete change in basic chemicals has brought a large number of new companies into the business, and almost without exception they have become members of NAC," he added.

Mohr pointed out that attendance at the meeting was so large two hotels had been filled to overflowing.

Mohr, incidentally, was succeeded as president of the association by Paul Mayfield, who had served as vice president.

Mayfield Elected President

Mayfield, general manager of Hercules Powder Co.'s Naval Stores department, was named president for a one-year term.

W. W. Allen, of Dow Chemical Co., was elected vice president, after serving for several years on the board of directors.

Lea S. Hitchner, first president of NAC 20 years ago and executive secretary since 1940, was reelected to the latter post.

Mohr, who will serve as a member of the board, didn't spend much time on the past. Commenting that "I doubt if this splendid attendance was in any way inspired or prompted by a desire to spend 1953 profits," he got down to the important business at hand—the poor profit situation.

He said profits in the pesticide industry for the

season were in "sharp contrast" to the chemical industry as a whole," and added that with increased costs and decreased selling prices, profits in the industry "have vanished."

Mohr explained that total sales in dollars "probably are off by a considerable amount because of the drastic price reductions which have been in effect through 1953."

These reductions followed an over-production in the industry last year when bugs failed to appear in heavy numbers throughout the country.

Another worry faced by many industry members is that of product liability claims, which he said total $6,990,680.

The bright side of the picture, however, is that 1953 demand and use of pesticides nationwide have been excellent.

Consumption Up Nationally

Mohr broke the figures down regionally to show that use in the West was low because of damage to fruit crops by frost, and up in the Middle West and East.

Requirements in the South, he added, were "pretty spotty."

But prospects for 1954 aren't bright, Mohr cautioned. With acreage allotments expected on several crops, a shrinkage of market potential for pesticides is looked for.

Because many convention delegates expressed interest in studying reports made on the fertilizer-pesticide mixtures panel at the convention, FARM CHEMICALS *presents complete text of the statements in the article on page 23.*

"There is little chance of betterment until some of the excess manufacturing capacity is converted to the manufacture of other chemicals with a better profit potential to such an extent that supply and demand for pesticides come into reasonable balance."

Hitchner also praised the work of the NAC during its 20 years of existence, in his informal report to members.

He recalled how the original pesticides were produced in most cases as by-products of various segments of the chemical industry. Hitchner said technical development of the industry and a recognized commercial pattern of distribution did not take place until several foresighted industry leaders "recognized the economic importance in the future and the potentials in the pesticide field."

Praises Industry 'Father'

He credited especially Ernest T. Trigg, formerly with John Lucas & Co., as "The father of the pesticide industry." (*See* FARM CHEMICALS, *September, 1953, page 45*). Trigg was the first president of the first trade association, "Agricultural Insecticide and Fungicide Manufacturers Association."

Turning to what he called "the confused economic status" of the industry, Hitchner presented the following five recommendations to improve the situation:

1. A reasonable expansion of our publicity and information program to inform the public of the facts pertaining to pesticide hazards to minimize legislative proposals and, where such legislation is necessary and in the public interest, to maintain it on a practical basis.

2. A modest expansion of our information program for the purpose of assembling data on the economic importance to the grower of pesticides. This should be by crops and growing areas, and to expand present markets and promote new uses, such as protection of stored grain, grassland programs, forest pests, herbicides, etc.

3. A program for the improvement of the quality of our materials and the possible establishment of standards (not standardization), with particular reference to physical characteristics, analytical methods, maintenance of quality in storage, etc.

Industry Approval Seal

4. Development of a cooperative promotional program in the world markets to publicize American

Photos on Opposite Page

1. James McConnon, McConnon & Co. and Jack Hewitt, Lebanon Chemical Co., exchange views in the lobby.
2. NAC staff members W. S. Moreland, Lea S. Hitchner, Lee H. Grobe and Val Weyl take time out to relax.
3. David Hall, BEPQ, J. E. Bussart, Velsicol Corp. and George C. Decker, University of Illinois in lobby.
4. Dr. M. D. Farrar, Clemson College; L. W. Hazleton, Hazleton Labs, and B. D. Gleissner, Amer. Cyanamid.
5. L. G. Parkinson, Atlas Powder Co.; E. D. Whitman, Columbia-Southern Chem. Corp.; D. C. VanWinkle, Atlas.
6. J. W. Moore, Floridin Company; Clark Bellamy, Acme Fertilizer Co.; John S. Chase, Port Fertilizer and Chemical Company; Albert B. Connelly, General Chemical Division and W. P. Crown of Carolina Chemicals.
7. Monsanto Chemical Co. employes, R. R. Wangerin, Howard Irwin, H. C. Koehler and C. L. Barber are shown.
8. C. C. Alexander, Geigy Co. and H. G. Walker, Pennsalt.
9. H. J. Grady, Cal. Spray-Chem. Corp.; H. R. Schneider and J. F. Kirk, General Chem. Div., Allied Chem. & Dye.
10. Conrad C. Johnson, Larvacide Products, Inc. converses with J. S. Wolff, B. F. Goodrich Chemical Co.
11. NAC's annual banquet, held at the Monmouth Hotel. Ernest Hart receives present from Van Weyl of NAC.
12. D. C. Van Winkle, Atlas Powder Co. and C. C. Compton of Shell Chemical Corp. who was a member of the panel.
13. Richard L. Stokes, R. T. Vanderbilt Company, Inc. and P. D. Peterson of Stauffer Chemical Company.
14. C. J. Watts Jr. of Naco Fertilizer Company and W. F. O'Brien, American Potash & Chemical Corporation.
15. Kenneth B. Nash and H. L. Straube of John Powell & Company and Myron Arbitblit, IPA Chemical Co.
16. W. Mercer Rowe Jr., Ashcraft-Wilkinson Company and W. F. Hall, Chipman Chemical Company get together.
17. E. L. Thomas, Swift & Company visits with D. F. Murphy and C. H. Cunningham of Rohm and Haas Company.
18. Mr. and Mrs. Robert Peacock, General Reduction Co., and Mrs. Clifford O. Eddy, Niagara Chemical Division.
19. W. F. Hall (center), Chipman Chem. Co. with Jack Brunton and J. W. Kennady, Diamond Alkali Org. Chem. Div.

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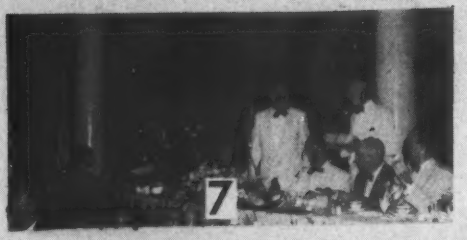
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Photos on Opposite Page

1. E. A. Georgi, United Coops.; C. P. Zorsch, Monsanto Chem. Co. and M. B. Turner, American Chem. Paint Co.
2. Mrs. J. E. Hewitt, Lebanon Chemical Co.; C. Y. Haas, Attapulgus Minerals & Chemicals Corp.; Mrs. William Merritt, H. J. Baker & Bro.; Mrs. Haas; Mr. and Mrs. W. M. Jarnagin, Attapulgus Minerals & Chemicals Corp.
3. August Petrus (left) and J. C. Berry (right), Cotton States Chem. Co., talk with W. J. Exum, Nitrogen Div.
4. E. K. Plant, Columbia-Southern Chemical Corp. and Clay Brazeal, Hayes-Sammons Chemical Co., Inc. meet.
5. C. D. Fischer (center), Carbide & Carbon Chem. Co., with R. W. Cohill and W. N. Long, Miller Chem. & Fert.
6. George I. Purvis, Standard Agricultural Chemicals, Inc. meets with S. H. Bear, Niagara Chemical Division.
7. Speakers' table at NAC's annual convention banquet.
8. George Gallowhur, Gallowhur Chemical Corporation, visits with J. G. Hastings, Canadian Industries, Ltd.
9. Paul Mayfield, new NAC president, and Arthur W. Mohr, retiring association head, at the annual banquet.
10. W. S. Moreland of NAC; C. H. Cunningham and F. J. Ampthor, Rohm & Haas Co. chat at the convention.
11. Jack Miller, Atlas Powder Co. and Joseph McKenna, Campbell Soup Co., meet in the Essex and Sussex.
12. H. R. Schneider and A. B. Connelly, General Chem. Div.
13. C. L. Barber of Monsanto Chemical Company gets together with Dr. Charles Smith, Ethyl Corporation.
14. Shown are H. W. Lee and R. H. F. Dade of Niagara Chemical Division, Food Machinery & Chemical Corp.
15. E. H. Phillips, GLF Soil Building Service, and J. H. Buchholz, Southern States Coop, discuss the meeting.
16. J. V. Vernon and S. H. Bear of Niagara Chemical Div. talk with R. S. Thompson, of Thompson Hayward.
17. C. L. Hovey (right), Eastern States Farmers Exch. with Stauffer's P. D. Peterson, M. D. Reichard, J. H. Kennedy.

pesticides, with approved standards and provisions for an industry seal of approval. This must be done to meet similar certification by some of the foreign countries.

5. A study of economic factors pertaining to the industry which would include time of purchase, warehouse and storage customs, credits, etc.

The cabinet member, J. Earl Coke, assistant secretary of agriculture, acknowledged that the USDA has no "complete or final" answer to the problem of farm commodity surpluses.

He said the secretary of agriculture had requested manufacturers of insecticides, fungicides and other farm chemicals to discuss the whole broad subject of agricultural problems during the summer and fall.

He declared "this does not mean we are scrapping farm programs. These programs have been built up by farmers and farm organizations, by Congress and by the people. But the programs that are not doing the job for which they are intended need to be altered or eliminated."

Coke called for the pesticide industry to take over more of the cost of testing farm chemicals, so that public research funds now used for this purpose "could be spent on making new discoveries that would benefit everyone."

The USDA official, in commenting on the challenge of an expected population growth in the United States, told members "we look upon your industry as a partner in facing this task."

The technical reports, given on the final day of the three-day meeting, were presented by nationally prominent officials.

George L. McNew, director of Boyce Thompson Institute, Yonkers, N. Y., reported on "Fungicides and Agriculture"; Richard O. White, chief of the registration section, livestock branch, Production and Marketing Administration, talked on pesticide registration while George P. Larrick, deputy commissioner of the Food and Drug Administration, spoke on the subject "FDA Reports to the Pesticides Industry."

Key point made by Dr. McNew was that "more plant diseases are being controlled better with less damage to the crop or hazard to the spray operation and consumer than ever before."

The Boyce Thompson head estimated that American farmers are using approximately a half-billion pounds of fungicides this year to control plant diseases that cause a loss of about two billion dollars annually to crops.

'Spend More on Research'

Dr. McNew emphasized that "farmers could afford to pay well over a hundred-million dollars for such protection of their investment in crop culture" and that pesticide industry members "can afford to spend more on fungicide research in the future.

"We have taken a conservative attitude by assuming that no more than half of the losses can be controlled," he stated adding that progress in science opens up new horizons that could make yesterday's viewpoints look "ridiculous."

In outlining the problems connected with pesticide registration, White said "the securing of information upon which to judge a new pesticide is one of the greatest problems in the economic poison registration program.

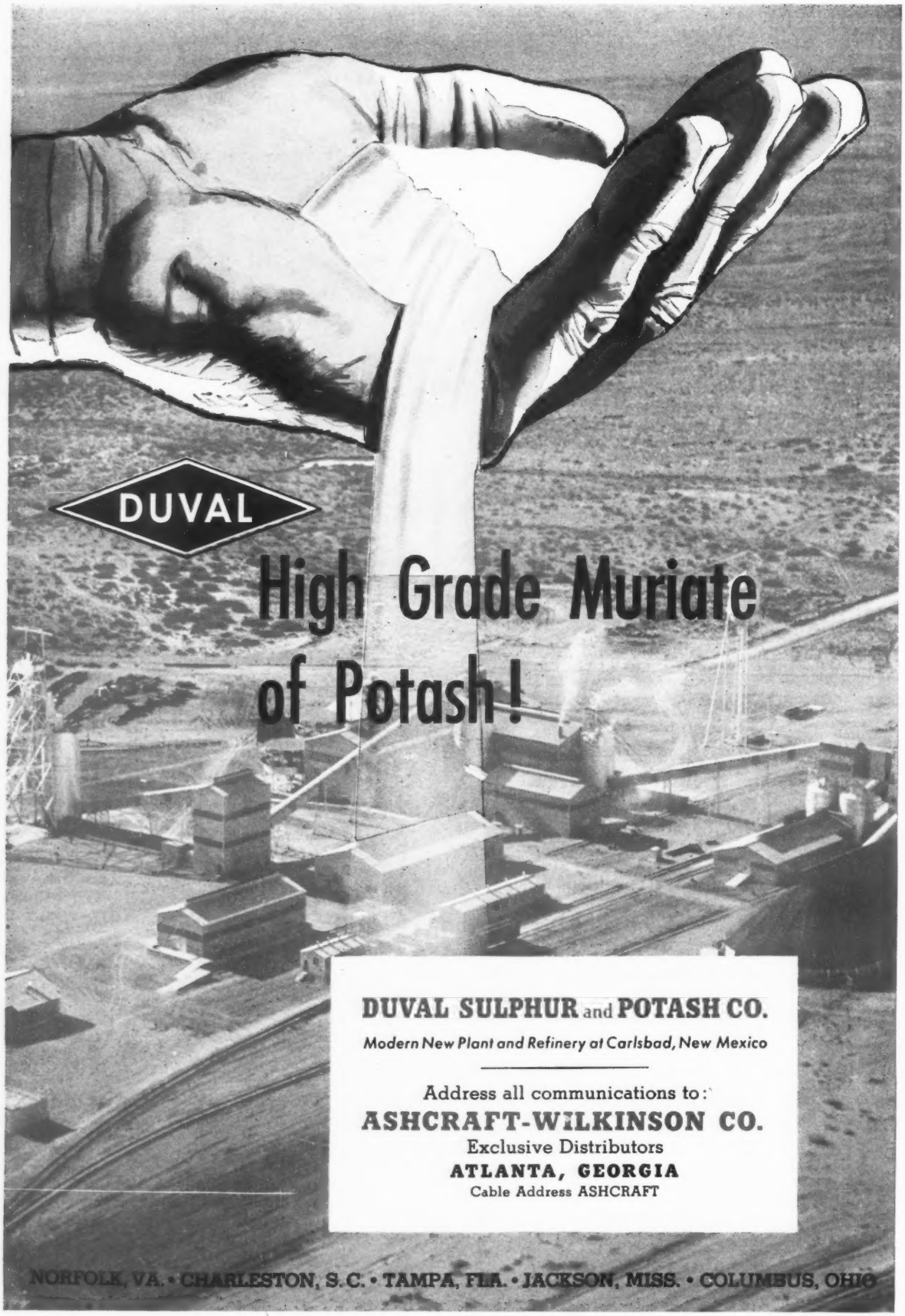
"The problem is particularly acute," he added, "with the newer and more toxic materials."

White described the details of evaluating hazards of pesticides, both to the user and the crops on which they are used, and the research and study that have gone into the field of precautionary label statements.

Lea S. Hitchner, NAC executive secretary, was honored for 20 years of "distinguished and loyal service" at the annual association banquet. Also honored were the following retiring board members: G. F. Leonard, formerly vice president of Tobacco By-Products and Chemical Corp.; W. C. Bennett, president of Phelps Dodge Refining Corp.; Ernest Hart, executive vice president of Food Machinery & Chemical Corp. and J. Hallam Boyd, executive vice president of Commercial Chemical Co.

The PMA official also touched on the problems arising from the recent trend toward pesticide-fertilizer mixtures and the necessity of having a label that tells the full story about the contents of the bag

(*Continued on page 71*)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'Opening a vast new area . . .'

Anhydrous Ammonia For Fall Application

AGRICULTURAL authorities in 14 states last summer went on record as recommending off-season application of anhydrous ammonia.

The Agricultural Ammonia Institute, in reporting this fact, declared that "a vast new era in the application of nitrogen for greater crop yields appears to be dawning for American farmers."

The farm leaders said the off-season application, in either the fall or early winter, is a satisfactory, economical method of making nitrogen available for crops the following spring.

Although anhydrous ammonia, containing 82 per cent of pure nitrogen, was developed for direct application to growing crops, off-season application offers numerous advantages to the farmer, according to the Institute.

The AAI lists these advantages for applying NH_3 in the fall or early winter:

Three Advantages

1. Farm labor at that time is at a maximum,
2. Farm operation is at a minimum and
3. Anhydrous ammonia is available in quantity.

Following up these facts, the Institute is distributing 300,000 copies of a pamphlet entitled "Is It Profitable to Fertilize This Fall?"

The bulletin was prepared as a result of meetings sponsored by AAI at the University of Missouri and Purdue University.

The consensus of leading agronomists, farmers and ammonia distributors, quoted in the pamphlet, is that fall application of NH_3 is practical and profitable, provided soil types, geography and climatic and weather conditions are such that substantial quantities of the plant food can be retained for spring crops.

In explaining the drive, the AAI reported that "it appears to be an established fact that anhydrous ammonia can be applied successfully in fall months in major portions of the important Midwestern and North Central farm belts."

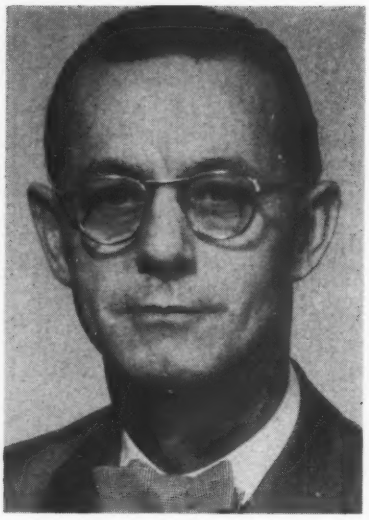
Use in South

Off-season application of the nitrogen fertilizer has not been established in the deep South, the group adds, yet many instances were reported where it was successfully applied in the fall on heavy

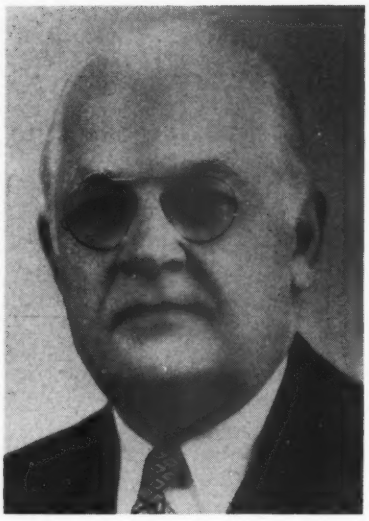
(*Continued on page 72*)

A remarkable growth difference, where NH_3 is used, is shown in this Shell Chemical Corp. photo of a wheatfield near Dixie, Wash. The mammoth billboard is 350 feet wide, 360 feet high. Compare its size with farm buildings and highway at bottom of photo. All factors of seeding, cultivation and climate were the same for both sections.

Ralph J. Crosby



Dr. S. L. Rankin



Dr. Neal Bowman

Demonstration, varied talks . . .

Fertilizer Safety Men Meeting in Chicago

TALKS on many phases of safety, a report on a safety contest, a demonstration of fertilizer blasting, a question and answer panel—all are scheduled for the fertilizer section of the National Safety Council when the NSC meets in Chicago, Oct. 19–23.

And to top off the program the biggest safety show on earth—the annual NSC Exposition—will be held during the same period for the more than 12,000 representatives from all over the world.

600 Participants

The delegates will hear 600 program participants at 200 sessions which will cover all aspects of accident prevention.

Of particular interest to members of the fertilizer industry, however, will be the sessions of the special section added recently to the national group.

A detailed description of the Cardox method of blasting solidified goods in the fertilizer industry is given in the article by G. M. Henry on page 21. The method will be explained and demonstrated at the safety meeting in Chicago for fertilizer representatives.

The fertilizer section, of which John E. Smith, director of safety at Spencer Chemical Co., is general chairman, is one of 25 sections of the NSC in the industrial field alone.

Others include automotive and aircraft manufacture, metals, printing, wood products and many others.

Fertilizer Sessions

Sessions devoted to the fertilizer industry will be held on Oct. 21 and 22.

In addition, the American Society of Safety Engineers will sponsor sessions of general interest to men in all industries.

Some of the topics will be nuclear energy, electronic testing, psychology of safety, machine guarding and protective equipment, research on safety and safety training.

Paul J. Mundie, well-known industrial psychologist, will give a series of four "early morning" talks designed to increase the safety man's personal effectiveness.

The lectures dealing with the human factors in the accident problem will provide information on developing intellectual effectiveness, emotional maturity and the art of dealing with others.

Big Exposition Planned

The 1953 exposition accompanying the discussion groups will feature the largest and most comprehensive display of accident prevention equipment to be seen anywhere.

All exposition space in the Conrad Hilton hotel will be filled with products, equipment and services relating to the promotion of safety, health, first aid, sanitation and general welfare.

Fertilizer manufacturers who have long sought the safest method for blasting bulk materials should be particularly interested in the demonstration by the Cardox Corp. of Chicago.

Chartered buses will take delegates to the International Minerals & Chemicals Corp. plant in Chicago Heights for a live demonstration of the blasting technique by the Cardox Co., using CO_2 to shatter the pile.

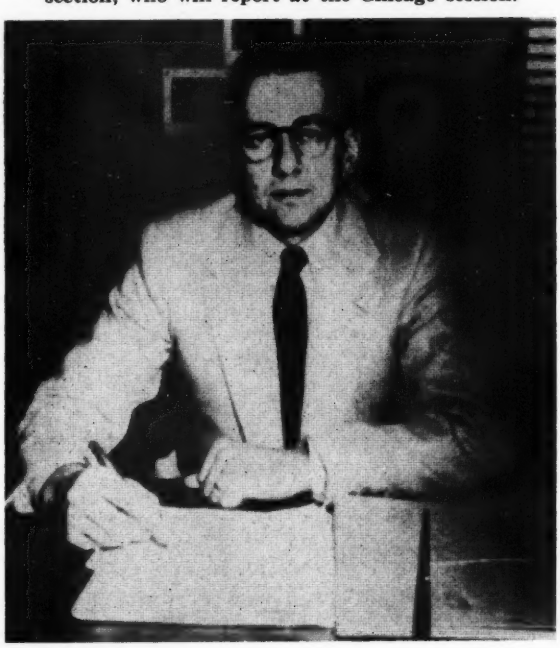
Another feature of the program is a panel of questions and answers on problems encountered by safety officials in fertilizer plants. Also scheduled is a series of case histories of typical accidents in fertilizer plants. Causes, investigations and preventive measures will be discussed by company representatives.

All meetings of the fertilizer section will be held in the Hamilton Hotel, with most of the fertilizer company representatives staying at the Morrison.

The sectional meeting will open Oct. 21 at 2 p. m. with a report from General Chairman Smith.

Leading national speakers will discuss various facets of safety at that meeting and morning and

John E. Smith, general chairman of the fertilizer section, who will report at the Chicago session.



Fertilizer Program

WEDNESDAY AFTERNOON

Hamilton Hotel

10th Floor, American Room

2:00 Report of the general chairman.
JOHN E. SMITH, dir. of safety, The Spencer Chemical Co.

2:20 Report of the nominating committee and election of 1953-54 officers.
H. S. FIELDS, industrial relations supt., Philblack Plant, Phillips Chemical Co.

2:30 "Safety—A Way of Life"
Dr. S. L. RANKIN, medical director, Petroleum Chemical Div., Employe Relations dept., E. I. duPont de Nemours & Co.

3:00 "Case Histories." (Panel Discussion)
(A panel of six selected safety directors, factory superintendents and production superintendents will each give the details of one outstanding industrial accident which has occurred in his plant within the last year or two. They will describe cause and remedies.
Discussion Leader—HAROLD R. KRUEGER, production manager, Snyder Chemical Co., Inc.
Participants:
R. F. BENNETT, president, Farm Fertilizer, Inc.
VICTOR L. CHERRY, plant safety insp., Mathieson Chemical Corp.
T. J. CLARKE, personnel dir., G. L. F. Soil Building Service.
RALPH E. FRASER, vice pres., Summers Fertilizer Co.
W. A. STONE, supt., Wilson & Toomer.

4:30 Report on Safety Contest.
CURTIS A. COX, asst. mgr., Manufacturing Dept., Virginia-Carolina Chemical Corp.

4:40 Announcement of CO_2 Blasting Demonstration by Cardox Corp. at the International Minerals and Chemical Corp.'s fertilizer plant in Chicago Heights.

THURSDAY MORNING

8:00 Buses leave from Hamilton Hotel for CO_2 Blasting Demonstration in Chicago Heights.

9:00 CO_2 Blasting Demonstration
G. M. HENRY, manager, Lime and Steel Div., Cardox Corp.

THURSDAY AFTERNOON

Presiding: general chairman elect

2:00 "Goals of the Fertilizer Section in 1954."
general chairman elect.

2:15 "Blue Print for Survival."
Dr. NEAL BOWMAN, National Association of Manufacturers.

3:00 "State Safety Department—Friend or Foe."
FORREST H. SHUFORD, commissioner of labor, North Carolina.

3:30 "The Cost and Profit of a Successful Safety Program."
RALPH J. CROSBY, assistant vice president in charge of accident prevention, Marsh & McLennan, Inc.

4:00 General Question and Answer Period.
(The Chairman will ask for questions from the floor regarding accident prevention in the fertilizer industry. This will not be a panel discussion. There will be no speeches and no experts selected to answer. The questions will be from and answered by the group.)

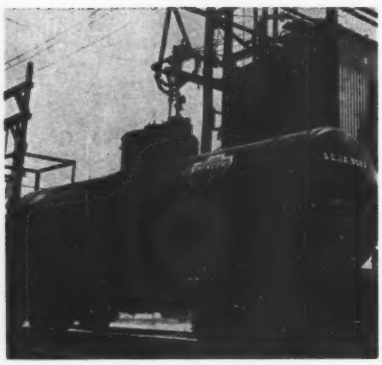
Home of Indian Head Brand Fertilizer is this modern plant in Russellville, Kentucky. Established in 1949, it has been expanded each year since. With distribution in Western Kentucky, the plant specializes in high analysis goods for tobacco growers.

Co-owners of the Commonwealth Fertilizer Company in Russellville, Kentucky, are (l. to r.) Nat Love and Joe Hicks.

Commonwealth Fertilizer Co.

...Another Spensol User

Highly specialized equipment worth millions of dollars is needed to produce SPENSOL (Spencer Nitrogen Solutions).



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America's Growing Name in Chemicals

afternoon sessions the next day.

"Safety—A Way of Life" is the topic to be discussed by Dr. Stewart L. Rankin, medical director of the Petroleum Chemicals division of Du Pont.

Career with DuPont

During his career with the company since 1937, Dr. Rankin has been concerned primarily with health and safety matters as they relate not only to the safe manufacturing of Du Pont tetraethyl compounds but also as they are related to the safe distribution and use of these compounds by the petroleum industry.

Dr. Rankin was graduated from Jefferson Medical College, Philadelphia, in 1930.

A discussion of safety as a "Blueprint for Survival" will be given by Dr. Neal Bowman, staff member of the National Association of Manufacturers.

Dr. Bowman has had experience as a shipping foreman, retail store manager, trade paper editor and advertising and publicity director.

He is noted as an educator, author, lecturer and sales psychologist. He served in World War I and later received a bachelor's degree from Temple University.

Taught Marketing

For 17 years Dr. Bowman was professor of marketing in the School of Business and Public Administration at Temple. He is the author of three books on advertising and selling.

Another highly qualified speaker who will address the section is Ralph J. Crosby, whose topic is "Cost and Profit of a Successful Safety Program."

Assistant vice president of Marsh & McLennan, Inc., of New York City, he is manager of the Safety Engineering department.

He has been a frequent speaker at national and local safety councils and has conducted supervisory training courses in accident prevention throughout the country for Marsh & McLennan's clients.

Crosby is a graduate of Massachusetts Institute of Technology and Harvard University, where he studied mechanical engineering.

He served previously with Travelers Insurance Co., designing point-of-operation guards. ◆

Here's how it's done:

Cardox Blasting Method

By G. M. Henry
Manager, Lime and Steel Division
Cardox Corp.

ONE of the foremost problems facing the production departments in the fertilizer industry is that of reclaiming the solidified mixed goods and superphosphates from curing and storage bins and compartments. This reclaiming procedure often creates hazards to safety, ties up man-power needed elsewhere and imposes an undesirable load on mechanical equipment.

The Cardox System has been applied successfully as a solution to this problem during the past several years. Long familiar to the mining industry, Cardox utilizes the relatively slow, but powerful, heaving action of expanding carbon dioxide released from a steel tube. Carbon dioxide was the gas selected for Cardox because it is inert, will not burn or support combustion and is non poisonous.

Description of Cardox Tube

The Cardox tube is made of chrome-molybdenum steel capable of withstanding internal pressures up to 40,000 P.S.I. Into one end of the tube is threaded a charging cap and into the other end is threaded a discharge cap. The charging cap houses a charging valve and two electric terminals for connecting the firing cable to the heater element. When current is applied to the terminals in the charging cap, the chemicals in the heater generate sufficient heat to instantly gasify the carbon dioxide, increasing the pressure within the tube.

The discharge cap is equipped with ports through which the expanding carbon dioxide is released. A soft steel shearing disc seals the carbon dioxide in the tube until the pre-determined pressure is reached. The disc then ruptures and the gas is released into the fertilizer pile.

Because of the variables encountered, such as differences in manufacturing procedures, nitrogen content, type filler used and method of filling the bins, each plant sets up its own shooting procedures. A typical dislodgment follows to a large degree this pattern:

1. **The proper drill hole placement is selected and a 4′–6′ deep hole is drilled into the pile. Vertical holes are not only practical but are very successful. However, the majority of drilling is done on a nearly horizontal plane with the drill being angled upward about 15 degrees. This method has the effect of cutting back the face of the pile and controlling overhangs.**
2. **A Cardox tube is inserted in the drill hole. Stemming may or may not be required depending on the physical characteristics of the material being loosened.**
3. **Electrical connections are made to the tube top terminals and the tube is discharged by means of a three volt dry cell, blasting magneto or 110 volt current.**
4. **The escaping and expanding carbon dioxide breaks the fertilizer and tumbles it forward on to the loading floor.**
5. **The tube is recovered for recharging and further use.**

Two factors determine the extent of the working face of Cardox—the volume of carbon dioxide and the release pressure.

When the proper pressure and volume have been found, these factors remain fixed and can only be changed by order of plant management.

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TIGHT PHOSPHATE STORAGE

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You are assured of season after season of phosphate-tight storage when you use Butler bolted steel phosphate tanks. These tanks are specifically designed for the storage of rock phosphate, super phosphate, triple phosphate, potash, lime and similar fertilizers. Heavy-gauge steel sections, sealed and bolted firmly for these powder-fine materials, give Butler tanks strength for full-capacity loads and high winds.

See how you can switch from bag to bulk rock phosphate storage . . . cut handling costs and add new profits to your operations. See, too, how you can buy at lower bulk phosphate price...stock ahead for rush seasons!

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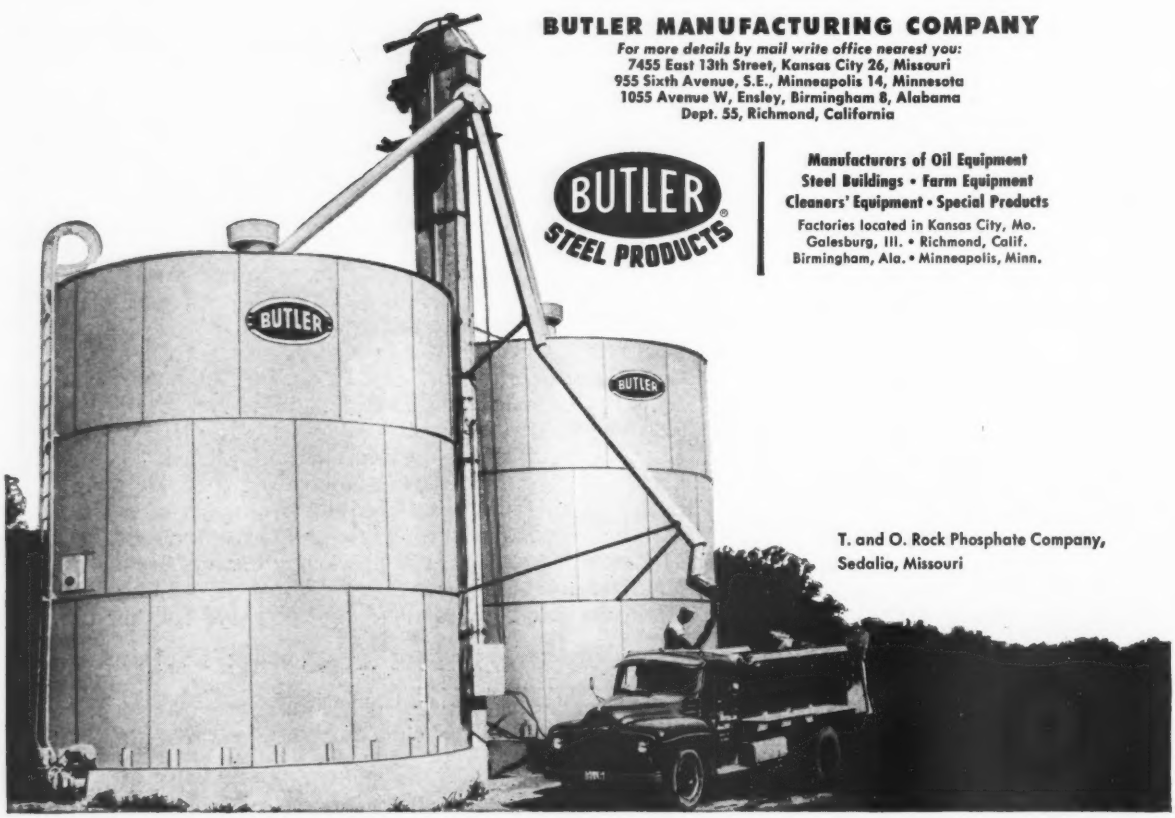

T. and O. Rock Phosphate Company,
Sedalia, Missouri

Rodney C. Berry, state chemist of the Virginia Department of Agriculture, addresses NAC convention as member of fertilizer-pesticide mixture panel. Others, from left, are Charles T. Harding, Virginia-Carolina Chem. Co.; Eugene P. Ordas, Velsicol Corp.; Chairman L. Gordon Utter, Diamond Alkali Organic Chemicals Div.; C. C. Compton, Julius Hyman & Co. division, Shell Chemical Corp. and M. D. Farrar, Clemson Agricultural College.

Panel airs problem:

Are Fertilizer-Pesticide Mixtures Worthwhile?

ONE OF THE most popular topics of conversation at the NAC 20th anniversary convention last month, both in the regular business sessions and in the hotel lobbies, was the mixing of soil insecticides with fertilizers for joint application.

Giving the biggest impetus to the discussions, which provoked a wide divergence of opinion among delegates to the convention, were the following panel members who addressed the group on the second day of the meeting:

M. D. Farrar, head of the Department of Entomology, Clemson Agricultural College; Rodney C. Berry, state chemist, Virginia Department of Agriculture; Eugene P. Ordas, head of the Product Development division, Velsicol Corp.; C. C. Compton, Julius Hyman & Co. division, Shell Chemical Corp. and Charles T. Harding, general manager of the Manufacturing department, Virginia-Carolina Chemical Co.

So that delegates who heard the reports can study them closer and for the benefit of members of the fertilizer industry who are interested in the discussions, FARM CHEMICALS presents the text of the talks. L. Gordon Utter, manager, technical service, Diamond Alkali Organic Chemicals Division, presided over the panel.

Dr. M. D. Farrar

Dean of Agriculture
Clemson Agricultural College

Farrar

AGRICULTURAL people until quite recently have been able to exercise only limited control over soil infesting insects and animal plant pests. Much of this control has been biological or by cultural methods. Although partially satisfactory, the control obtained left much to be desired.

Beginning in 1942 new tools were rapidly added to the list that would aid in solving this problem. The introduction of DDT was the first of these tools and many more have been added since. New chemicals are added to the list each year.

It is well known that the area occupied by the roots of a plant may be as extensive as that occupied by those parts above the ground. It is physiologically necessary for the plant to develop an extensive feeding area for its roots in order to find food and water for the above ground parts. The physical and chemical properties found in soils determine to a large degree the type of vegetation which that soil will support.

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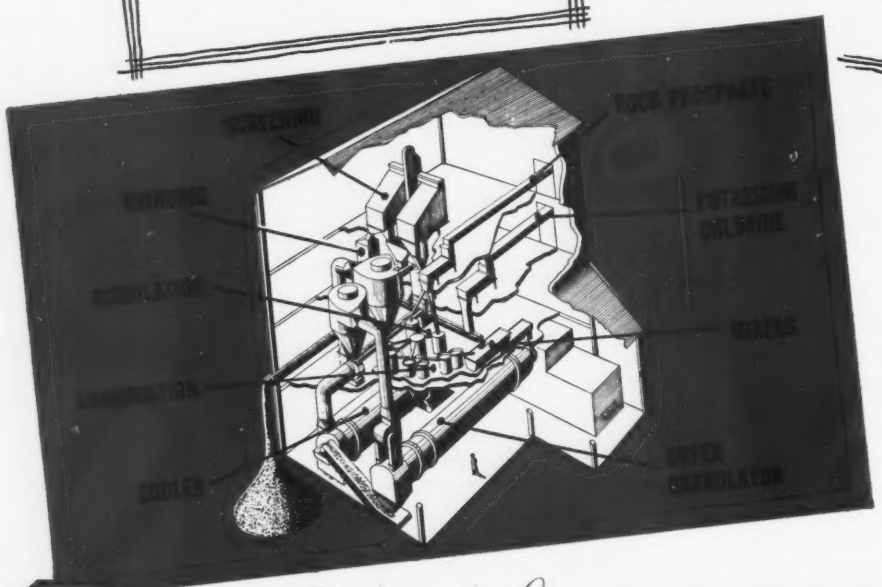

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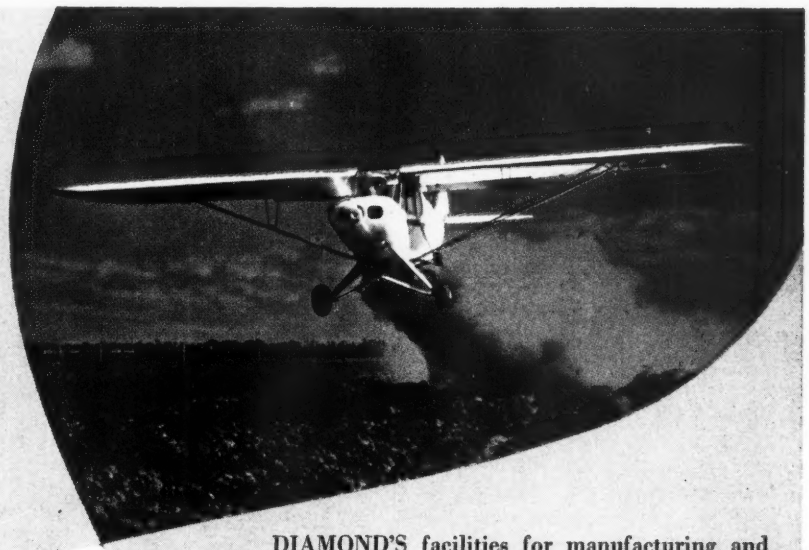

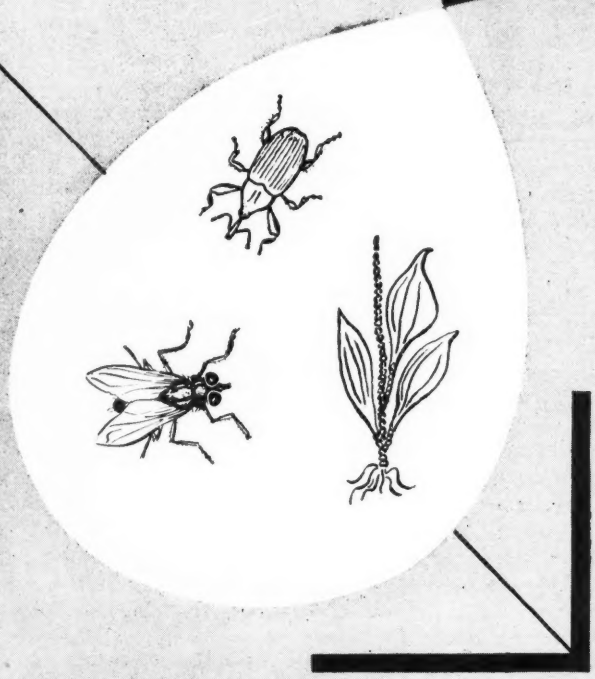

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or a part of their life in the soil. Not all insects feed in the soil, but many of them do. Those that feed in the soil may destroy the roots of plants either mechanically or by using the roots as food. In either case the injury that they cause will limit the development of the plant.

Insects that have adapted certain crops as their preferred host may so seriously injure the plants as to make the growth of the crop unprofitable. There are many crops that can not be grown in adapted areas because of an insect problem in the soil. Some crops are still grown in such areas in spite of heavy losses to insects and other soil pests.

It was mentioned that DDT was the first of a series of chemicals that was found useful as an insecticide in the soil. Other chemicals help to control other soil parasitic plants and animals including bacteria, fungi nematodes and many soil animals other than insects.

These controls have taken the form of dusts, granules, liquids and fumigants. The methods of application are as varied as the materials employed.

Destroy Parasite

In order to be successful, a chemical must be effective in destroying the parasite without serious injury to the host plant. The matter of host tolerance has been a limiting factor in the use of most chemicals. Often a chemical will destroy the pest, but if at the same time the injury from the chemical exceeds that of the parasite, the chemical must be abandoned. Only a few chemicals have survived the tests including thousands.

With the development of mechanized farming, the problem of adding chemicals to the soil is about solved. Machines are available for handling all types of chemicals.

The major question now is to demonstrate the proper use of the chemical. To be successful the chemical must do the job in pest control and at the same time show a profit to the producer. He is not interested in any operation that will not yield a return on his labor and investment.

This leads up to the subject of pesticide-fertilizer mixtures. The use of fertilizers has become a standard practice in most farm operations. Machines are available to apply fertilizer in almost every desirable manner. It is then almost a logical assumption that if something is to be applied to the soil why not follow the procedures used for fertilizers.

The bulk of fertilizers applied per acre is rather large. Relatively simple fertilizer machines are in common use. The amount of pesticide required per acre is relatively small and essentially no satisfactory machines are available for distributing a pesticide.

Single Operation

Where pesticides and fertilizers can be applied together a single operation may do the job. Where the fertilizer is applied in a narrow band, the pesticide can not perform to its maximum efficiency. Fortunately, most pesticides are slightly volatile and there is apparently some movement of the toxic portions of the chemicals from the point of placement in the soil.

Where pesticide-fertilizer mixtures are broadcast and worked into the soil by machines they are extremely satisfactory.

The examples are too numerous to raise the question of the efficiency of the new chemicals as pesticides in the soil. The time is not too far distant when recommendations can be pretty well standardized. Already vast areas of farmlands have been rid of certain pests by the treatment of their soils with pesticides. In some states the bulk of materials has been applied as pesticide-fertilizer mixtures.

The granular type insecticide may to a limited extent provide a means of application of pesticides without fertilizers. They are now available in a wide range of concentrations suitable to almost every requirement. Physically they handle much like fertilizers and may be applied either alone or as a mixture with fertilizers.

Medium of Purchase

Granular insecticides provide a medium of purchase whereby a farmer can buy a pesticide under a label. Purchasing the pesticide in this manner assures a full value, as compared to an item of uncertainty where the pesticide is mixed with fertilizers. The problem of labeling and testing pesticide-fertilizer mixtures is confusing. There are many ways of handling the problem. None is completely satisfactory.

A study of the manufacture of these mixtures will help to solve some of the problems. Chemically and physically the materials are reasonably compatible.

The procedure for uniformly mixing a small volume of pesticide with a large volume of fertilizer has not been satisfactorily established.

The present methods appear to be satisfactory when based on results on the farm. Most producers have been well satisfied with the results obtained following the use of pesticide-fertilizer mixtures. "Control wise," however, much work needs to be done in order to insure a uniform product that will be satisfactory to both the manufacturer and the producer.

Rodney C. Berry

State Chemist
Commonwealth of Virginia

Berry

I have been asked to discuss the laws affecting the sale and distribution of fertilizer-pesticide mixtures. Broadly speaking a fertilizer is a substance for promoting plant growth and a pesticide is a substance for mitigating or killing pests. Both substances are regulated by separate laws in most of the states. Major differences in these laws are being eliminated and we are approaching uniform enforcement.

State laws regulating the sale of fertilizer have been in effect many years and during much of this time research work and extension education has been conducted by the land grant colleges and the U. S. Department of Agriculture. Farmers are fairly well informed about fertilizers, and few farmers are apt to injure themselves or crops through their use or misuse of fertilizer.

Because fertilizer is not a highly toxic substance, laws regulating the labeling, distribution and responsi-

bility of the manufacturer are not as strict as pesticide laws. All regulation is on an intra-state basis. Most fertilizer laws provide that the fertilizer shall not contain ingredients which may damage crops or soil.

Pesticide Laws

Pesticides are regulated by both federal and state laws and most of the laws have been enacted or amended during the past ten years. Many of the pesticides are highly toxic and for public protection necessarily require strict regulations regarding distribution. Directions for use and warning against misuse must be given.

Under most laws, the manufacturer is held responsible if the insecticide, fungicide or herbicide, when used as directed or in accordance with commonly recognized safe practice, shall be injurious to living man or other vertebrate animal or vegetation to which it is applied, or to the person applying such economic poison, except pests and weeds. This responsibility has recently been upheld by the Virginia Court of Appeals. No comparative responsibility to my knowledge appears in any fertilizer law. Many other provisions to pesticide laws could be cited in contrast to fertilizer laws.

Fertilizer-Pesticide Mixtures

Under the Federal Insecticide Act the pesticide is the active ingredient and the fertilizer is the diluent or inactive ingredient and such mixtures passing in interstate commerce must be registered.

I have recently reviewed the state fertilizer and pesticide laws and my conclusion is that in states having both laws, the manufacturer of fertilizer-pesticide mixtures will be required to comply with the provisions of both laws, and in most states this includes registration under both laws.

Only one fertilizer-pesticide mixture has been registered in Virginia in 1953. This one is recommended by the Virginia Experiment Station and is restricted for use on peanuts for the control of the Southern Corn Rootworm. The label accepted for this mixture has been approved by the Federal Agency which allows this item to be shipped interstate. Early in 1951, the Virginia Department of Agriculture adopted the policy that no fertilizer-pesticide mixture would be accepted for registration and use unless it had been recommended for use by the director of the Virginia Experiment Station.

Resolution Adopted

The following resolution was unanimously adopted on June 21, 1951 by the Southern Association of Feed & Fertilizer Control Officials:

1. In view of the long lasting effects of the misapplication of pesticides, it is recommended that fertilizer control officials of this association not register or permit the sale or the custom mixing of fertilizers containing pesticides for field crop or horticultural use, unless such mixtures have been formally approved by the officials of the agricultural experiment station or other officials vested with such responsibility by law in their state.
2. It is believed that the use of mixtures of fertilizers and pesticides is generally based on the economics of the practice and that the danger of contaminating crops or soils or both by misapplication, by inappropriate levels and methods of application is real and does not warrant the savings in labor costs.
3. Mixtures of pesticides and fertilizers which are registered for sale should be properly labeled and meet all requirements of both the fertilizer and pesticide laws of the various states.

This resolution has also been adopted by the Association of American Fertilizer Control Officials, the Association of Economic Poisons Control Officials and the Association of Presidents of the Land Grant Colleges.

Although most fertilizer manufacturers are familiar with the regulatory provisions of the states fertilizer laws, I believe that few of them are aware of the legal responsibilities they will assume in the marketing of pesticides in the form of fertilizer-pesticide mixtures.

Label claims, including "Ingredient Statement," "Directions for Use" and "Warning Statements" are extremely important because they furnish essential information to the user and often are the basis for determining the responsibility of the manufacturer. These facts are clearly stated in the opinions of the Justices of the Virginia Court of Appeals, April 20, 1953 in the case of McClanahan and others.

The use of pesticides is essential in agriculture today but I am sure everyone concerned will admit that the use of pesticides is a controversial subject, particularly so in fertilizer-pesticide mixtures. A few able scientists advocate the use of fertilizer-pesticide mixtures while other equally qualified scientists disagree and recommend that these materials should be applied separately. The regulatory official has a very difficult job in determining the correct course in this complicated problem.

Most control officials can foresee the complications and dangers which lie ahead in the probable misuse of such materials and have, therefore, advised against their use; however, if the provisions of the laws are complied with, the mixtures must be registered.

The only claim supporting the use of fertilizer-pesticide mixtures which is not controversial in my opinion, is that based on the economics of the practice. I predict that the general use of fertilizer-pesticide mixtures will necessitate more laws and regulations.

Before entering this field of operation both the pesticide manufacturers and the fertilizer manufacturers should consider the complications and responsibilities which may result in the marketing of these mixtures.

Dr. C. C. Compton

Julius Hyman Division
Shell Chemical Corp.

Compton

I am going to depart from the subject to the extent of limiting my remarks to the use of insecticides in fertilizer. At the present stage of development pesticides is a too inclusive term. Suffi-

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cient research has been done, however, to talk intelligently about insecticides in fertilizers.

The interest in insecticide-fertilizer mixtures came as a result of logical deductions. When we began to develop insecticidal chemicals that were effective and economical for use in controlling soil inhabiting insects it was natural to look into various methods of depositing the insecticide where it would be effective. Fertilizers have been applied to soils for many years. And where have they been put?

Right where the plant roots could make the best use of the plant foods in the fertilizers. Where are the insects which are so destructive? Right where the plant roots are found. Now if we are to apply fertilizers *in situ* for easy access by plant roots and then apply an insecticide to kill the insects which feed on the roots where fertilizers are found, it is only logical to apply insecticide-fertilizer mixtures.

Now we are interested in what insecticide-fertilizer mixtures mean to the entomologist, the farmer, the insecticide manufacturer, the fertilizer manufacturer, the equipment manufacturer and the nation.

The Entomologist

Entomologists have conducted extensive research in this field and favor soil applications of insecticides in fertilizer. Insecticide-fertilizer combinations have proven highly effective in controlling major pests and since the farmer is now familiar with handling fertilizer distributing equipment he has little new to learn.

Entomologists constantly are seeking the most economical methods of insect control not only from the standpoint of insecticide costs but also from the standpoint of application costs. Where insecticide-fertilizer combinations are used the application costs are no greater for both the insecticide and the fertilizer than they are for the fertilizer alone. No special or additional equipment is required. This economy in application is not accomplished at the expense of the fertilizer manufacturer as we will presently see but simply eliminates an unnecessary application expense for the farmer.

The Farmer

The farmer readily accepts the idea of controlling insects in the soil by the application of insecticides especially if the insecticide can be applied along with the fertilizer. He does not have suitable equipment in most cases to apply insecticides as they should be applied.

Conventional spraying equipment must be altered for most soil applications and conventional dusting equipment is not at all suited for making soil applications. He does not look with favor on the prospect of buying special equipment.

He welcomes the idea of applying insecticide-fertilizer combinations both from the standpoint of ease of operation as well as the economy of application.

Insecticide Manufacturer

There is no secret about the interest insecticide manufacturers and formulators have in insecticide-fertilizer combinations. They afford a new market of great potentialities. Soil insects have long taken enormous tolls and the economy of applying soil insecticides along with fertilizers will greatly expand the market for soil insecticides. Fertilizer manufacturers are not equipped to formulate basic insecticidal chemicals. They purchase concentrates in the form of dust or granular formulations.

The manufacturer of insecticidal chemicals must be in a position to assure the fertilizer manufacturer and the farmer that the addition of insecticidal chemicals to the fertilizer will not result in phytotoxic or toxic residue hazards and will not adversely affect the flavor of crops grown in treated soil. All parties concerned will want to be sure that the insecticide-fertilizer mixtures are uniform in composition to allow uniform application of both insecticide and fertilizer when the mixture is applied to the soil.

Fertilizer Manufacturer

It seems to me the fertilizer manufacturer stands to be the big gainer in this new approach to insect control.

Addition of insecticides to fertilizers offers a means of increasing fertilizer consumption, for what gaineth a farmer or fertilizer manufacturer if the farmer applies fertilizers and insects destroy the plant root system or so damage it that the plant cannot make use of the plant foods supplied by the fertilizer.

Plants can only make use of fertilizer constituents when they have vigorous, healthy root systems. Insects do far more damage to root systems than is generally realized. In addition to root damage by direct feeding of insects additional roots are destroyed by fungi and bacteria that gain entrance to the roots through feeding scars and punctures.

Fertilizers will always make the farmer a greater profit if his crops have good root systems and plants have good root systems when the proper soil insecticide is applied.

Like the insecticide manufacturer the fertilizer manufacturer is entitled to a fair profit. It would not be good business to encourage the fertilizer manufacturer to add an insecticide to his mix if he could not make such a profit by doing so. In this competitive age he must be assured of a competitive position as regards the insecticide in his fertilizer. A little simple arithmetic will show that the fertilizer manufacturer will always be able to compete with conventional insecticide formulations and make a substantial profit. He has the added selling point of no increased cost of application for the farmer.

Equipment Manufacturer

Present indications are that soil application of insecticides will increase yields as much or more than fertilizer applications. This increase is additive. Equipment manufacturers can look forward to greater use of fertilizer distributing equipment. Farmers can afford to purchase equipment if they can double their profits over the use of fertilizer alone.

The Nation

Soil insect control is one more accomplishment resulting from research, team research through the cooperation of the insecticide manufacturer, the entomologist and

the farmer. One more link has been forged in the chain of accepted practices which enable our farmers to produce crops on an assured basis.

Farmers now can plant crops with the assurance that their soil insect problems can be solved just as satisfactorily or even more satisfactorily than those problems resulting from insect attack above ground.

Controlled production, about which we hear so much these days, cannot be successful without a reasonable plan of assured production yields. We cannot long afford to plant five to 20 per cent of our acreage for the sole purpose of feeding insects.

C. T. Harding

General Manager
Manufacturing Dept.
Virginia-Carolina Chemical Co.

Harding

THE subject assigned to me is one about which a lot has been said but about which not much is known from an experience standpoint. Be that as it may, my intention is to try to point out some of the advantages, if any, and disadvantages as we see them today in the fertilizer industry, inherent in the admixture of pesticides with fertilizers.

Some farmers are experimenting with fertilizer-pesticide mixtures; our plants have made numerous batches of varying mixtures containing chlordane, aldrin, DDT and others. Most of these tests have been made in Florida, South Carolina and Virginia, with the permission of the state authorities; however, we have never listed any of these mixtures for sale or recommended them to our trade. The results in all cases that I have followed have been satisfactory.

Let's start with the **advantages** —and again let me say, if any.

1. The primary advantage to the farmer is his ability to place both the insecticide and fertilizer in the field with one application. This eliminates handling the insecticides and applying them in a separate operation; it also eliminates the necessary equipment for such application.

2. It reduces the danger of contamination of other farm supplies that may be stored in the farmer's barn or storehouse.

3. The farmer feels that he is getting a more even distribution when he drills in a fertilizer-pesticide mixture.

4. Reduced danger to the user of the pesticide as compared with the handling of concentrated poisons.

Other Advantages

There are possibly a number of other advantages that could be claimed by the farmer.

As we see this situation, there are no advantages from the fertilizer industry standpoint.

There are, however, many **disadvantages** from the fertilizer industry's point of view.

1. The mixing of fertilizers and the mixing of insecticides is so different that few, if any, fertilizer plants are equipped properly to do this work.

2. The time cycle required for proper mixing of insecticides with fertilizers would seriously affect the service that the industry is now giving the trade.

3. The multiplicity of grades that would naturally follow the practice of incorporating odd amounts of these insecticide materials into the number of grades we now offer would present the greatest storage problem imaginable.

4. The fact that most of the insecticide materials required are toxic to human beings would present several problems. Additional sanitary facilities for shower baths, etc., would have to be made available. Special supervisory personnel would have to be trained in the proper handling of these materials.

5. Unless special equipment and facilities are installed in the average fertilizer plant of today, the question of meeting the state requirements on analysis would be next to impossible. On several of our mixtures where great care, time and strict supervision were practiced, we were only able to stay within the tolerance allowed by one state. Even though we knew the weights were correct and the mixtures made as complete as we thought possible with fertilizer equipment, never did we get the full guaranteed analysis from either our laboratory or the state laboratory.

Bad Practice

6. We are told by those who know insecticides that mixing these materials in a base that carries temperatures of 130 degrees to 160 degrees F., or higher at times, is not a good practice. This being true, a base of odd analysis is required in each grade, to which the pesticide material must be mixed at time of shipment to properly comply with the guarantee. To make these mixtures as they are called for throughout the day would reduce our daily shipping capacity to a point where our customers could not be properly supplied for their needs.

7. The cost of this slow, intimate mixing would, in my opinion, eliminate the advantages the farmer might gain by distributing his fertilizer and insecticides in one operation.

8. Considering the cost involved if a farmer had several bags of these mixtures more than actually was needed for a given crop, he could not afford to use them on other crops, whereas today many popular grades of commercial fertilizer can be and are applied to a number of crops throughout the entire planting season in several areas.

9. In order properly to handle fertilizer-pesticide mixtures, a plant should be designed for such a business, with proper mixing facilities, proper safety equipment and proper shipping machines. It should be separated from the main fertilizer plant to insure that no contamination would occur and that those employes not immediately engaged in this work would not be exposed to the dust and fumes from these materials.

10. Because of the rapid progress of your industry, in the way of new and better products, what assurance does the fertilizer industry have that goods made up containing varying quantities of these materials that are not sold in a given year will be saleable in the next season? With this fact always staring us in the face, we cannot afford to mix goods containing these materials except on

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specific order, with the complete understanding that none can be returned.

There are many other objections to such a practice and it is our opinion, and certainly the opinion of quite a number of others in the fertilizer industry, that the farmer should employ some means of applying his insecticides other than the fertilizer-pesticide route.

Eugene P. Ordas

Head, Product Development Division
Velsicol Corp.

Ordas

THE development of the so-called modern pesticides has been characterized by many significant and economically important advances in the technology and art of agricultural pest control. However, much of our present knowledge of agricultural pest control has been gained through extensive empirical investigations conducted by the painstaking and persistent efforts of the research workers of state and federal agencies, and educational institutions.

It is in tribute to the excellent work of these agricultural scientists that so much practical knowledge and experience in the application of pesticides has accrued, even though but few fundamental theoretical studies have been made with regard to the chemical and physical aspects of formulation and their effects upon the physical and biological problems of application.

It, therefore, is not surprising that in the few short years that pesticide-fertilizer combinations have been investigated, we have been impressed with the advantages and have sought to conform to the demand even before all the unknown problems in formulation, manufacturing, storage, application and others have been enumerated and time alloted for their systematic investigation.

Other members of this panel have discussed various aspects of pest control using techniques of combined fertilizer-pesticide application and the legal aspects which are involved. For my part of the discussion, an attempt will be made to touch upon some of the problems, or more generally on the concern for additional required knowledge along the lines of manufacturing and the numerous problems requiring chemical analysis.

Many reports have been issued which describe the control of insects, the effect upon crop yields and the effect upon germination or vitality of plants resulting from the field application of fertilizer-pesticide combinations.

Other factors of concern to this subject, which are more obscure and require a different approach, are the persistence of the pesticide in the soil, its effect upon the availability of the nutrients, probability of objectionable off-flavor or crop residue, effect upon soil organisms, etc.

To study these problems requires the cooperative efforts of the entomologist, agronomist, micro-biologist, food technologist and the chemist.

Crop Residues

The investigation of crop residues and the persistence of the pesticide in the soil are chemical or biological problems requiring the development of analytical techniques of extreme sensitivity and accuracy. Even with one given insecticide, the development of an analytical procedure for soil residues requires almost as many different procedures as there are soil types. Similarly, different analytical techniques must be developed for the analysis of pesticide residues in different crops.

The foregoing considerations all are of vital concern to us and they cannot, in a sense of fairness and safety to the grower and ultimate consumer, be overlooked. We may rightfully ask, are the effects or problems arising from the application of a combination fertilizer-pesticide type of product expected to be significantly different than the effects which have been observed when the chemicals were applied separately? Many experiments and analyses have shown that the application of organic pesticides to the soil for the control of soil pests presents no crop residue problem when they are used as recommended. Most, or nearly all of the plots and fields from which the crop samples were taken for analysis, had received fertilizer treatment.

Residues in the soil have been of considerable concern from two particular points of view. On one hand, we have questioned whether or not repeated applications of a pesticide to the soil will result in a gradual build-up to harmful levels. On the other hand, we have questioned the economics and have asked how many years or seasons will the pesticide persist in the soil, to give control, before retreatment is necessary. To answer these questions, one must necessarily consider each pesticide in the light of its own physical and chemical properties.

Factors which will effect the persistence of the pesticide in the soil are its vapor pressure, chemical stability, the soil type, susceptibility of the chemical to the attack of microorganisms, effect of strong light, temperature, rainfall and solubility in water.

Controlled experiments have demonstrated that when insecticides have been applied at heavy dosages for the control of soil infesting insects, control has been obtained for several years after application. Chemical and bioassay analyses of soil samples from these plots have shown there to be a gradual but definite decrease in the soil insecticide content even though insect control is still obtained. The inference from these experiments is that once the infestation is under control, there is less probability of reinfestation.

Much of the foregoing discussion has related to the field aspects of this subject; however, we must also consider the manufacturing, regulation and storage aspects.

Because the pesticide should be applied at recommended rates, and also because the quantity of the fertilizer applied per acre and the fertilizer formula may be varied widely, we can speak only in general terms, at this time, regarding the pesticide formulations to be used and the manufacturing techniques for their incorporation.

In almost all cases, pesticides are used at a low concentration when combined with fertilizer. Because of the obvious difficulty in obtaining uniform distribution of

such a small proportion of pesticide in a large mass of granular fertilizer, it is generally recognized that a diluted form of the pesticide should be used. For example, if the recommended dosage of a pesticide is one pound per acre, to be applied with fertilizer at the rate of 400 pounds per acre, we would need to blend 20 pounds of ten per cent pesticide dust with 380 pounds of a fertilizer base computed to give desired formula in the finished blend.

Since the amount of pesticide dust is only five per cent of the total, sufficient time must be allowed during blending for practical and uniform distribution of all ingredients. Depending upon the efficiency of the equipment and assuming a ribbon type of blender is used, the blending cycle has been stated to require ten to twenty minutes.

The choice of a carrier for organic insecticides used in fertilizer mixtures has been the subject of some discussion. Because of the possible tendency for the segregation of small particles of dry powder from the bulk of the fertilizer during storage or shipment, it is believed by some that a granular form of the insecticide should be used. In an ideal situation, the granular insecticide should be of the same average particle size and density as the fertilizer; however, a 30–60 mesh carrier of the Fullers Earth or Attapulgite types has been used with apparent success.

Still other workers have effectively used a finely powdered insecticide since it can be more intimately mixed with the fertilizer granules. If a powdered form of the insecticide is used, it is advisable to use a low absorbency type carrier and the insecticide should be applied to the carrier by direct impregnation. Comminution of this mixture is recommended to obtain an extreme fine state of subdivision of the particles and a uniform distribution of the pesticide. It is believed by some that a finely powdered insecticide will adhere to and uniformly coat the fertilizer particles.

Rigid control of the mixing and blending operation must be maintained and it is most desirable that each lot produced be chemically analyzed to assure the uniform distribution of the insecticide. In this respect a rapid and reliable chemical method for analysis is often the key to successful operation and performance.

Although different pesticides require different analytical methods, it is generally found that one of the most frequent sources of error in the analysis of any pesticide-fertilizer mixture lies in the sampling techniques and the method of preparing the sample for analysis. The best method found for obtaining a sample of a fertilizer-pesticide mixture involves the use of a thief or similar probing device. When sampling from a blender, bin or sack, multiple random samples should be taken and composited. A minimum of one pound of the composite sample should be pulverized in a suitable hammer mill or laboratory sample mill to reduce it to a fine powder for chemical analysis.

Most of the insecticides used with fertilizers for the control of soil insects are of the chlorinated hydrocarbon types, but it must not be assumed that merely analyzing for organically bound chlorine should be adequate. Because of the usually high percentage of inorganic chlorides in fertilizer, it is advisable to extract the insecticide from the fertilizer mixture using some solvent most suitable to the insecticide in question. For the less volatile insecticides, benzene or hexane are usually satisfactory. For the more volatile insecticides, normal pentane or diethyl ether are preferred.

Either soxhlet extractors or leaching techniques may be used for extraction. After evaporating the solvent from the organic residue, the percentage of insecticide may be determined by any of the recognized methods. Since the total chloride method lacks specificity, it is recommended that specific colorimetric methods should be used whenever they are available. Specific analytical methods are necessary whenever a mixture of pesticides is present.

Often when extracting fertilizer-pesticide mixtures for colorimetric analysis, one encounters certain wax-like or oily organic substances which can interfere with the method unless removed by some clean-up technique such as chromotography.

A very important part of the state chemist's function is the collection and analysis of samples of commercial fertilizer-pesticide mixtures. The above general comments, with regard to the sampling and analysis of such mixtures, could apply to the state chemist as well as to the manufacturer or formulator.

With regard to the shelf life or storage life of insecticides with fertilizers, there seems to be no general compilation of data. There have been reports in the literature that mixtures of insecticides with fertilizer have been kept in storage for periods varying from sixty days to one year without loss of insecticidal activity.

Where custom blending of pesticide-fertilizer mixtures is practiced, there is little occasion for storing the materials for long periods of time, but where there is a possibility of storage or hold-over of formulated stocks, there is concern over the compatibility of the pesticide-fertilizer ingredients.

In this respect, the construction of the shipping or storage container, and the percentage of moisture in the mixture may be of the greatest importance, but other possible factors affecting storage life may be of the pH of the mixture and the relative hydrolytic stability of the pesticide and excessive temperatures in the warehouse.

Pesticide-fertilizer mixtures have been demonstrated to be entirely practical and economical. Yet there still is reluctance on the part of some authorities to recognize or sanction their use. This is certainly understandable since there are very specific questions which do arise.

We should, however, recognize the advantages and consider possible disadvantages if any, but above all, we should be tolerant of the situation which confronts us during the heat of commerical development. It is especially necessary, in these times, that we avail ourselves of every opportunity to observe the effects of new technological developments and when definite problems in application do arise during the course of our investigations, they should be attacked in their order of significance and occurrence and the evidence should be used as a guide to our search for a solution. ◆

Arizona Fertilizers makes a big jump into the pesticide field with the recent addition of this insecticide unit located at Toltec, Ariz.

Company builds integrated plant for insecticides

Arizona Fertilizers Adds Pesticide Unit

FIRST completely integrated plant capable of processing technical concentrates for powdered and emulsifiable liquid insecticides in Arizona has been completed by Arizona Fertilizers, Inc. It is located at Toltec, four miles north of Eloy, Ariz., where it was put in operation several months ago.

The Toltec plant can supply Arizona Fertilizers' blending plants with sufficient liquid and powdered insecticide concentrates to treat 3,000 acres of cotton per hour.

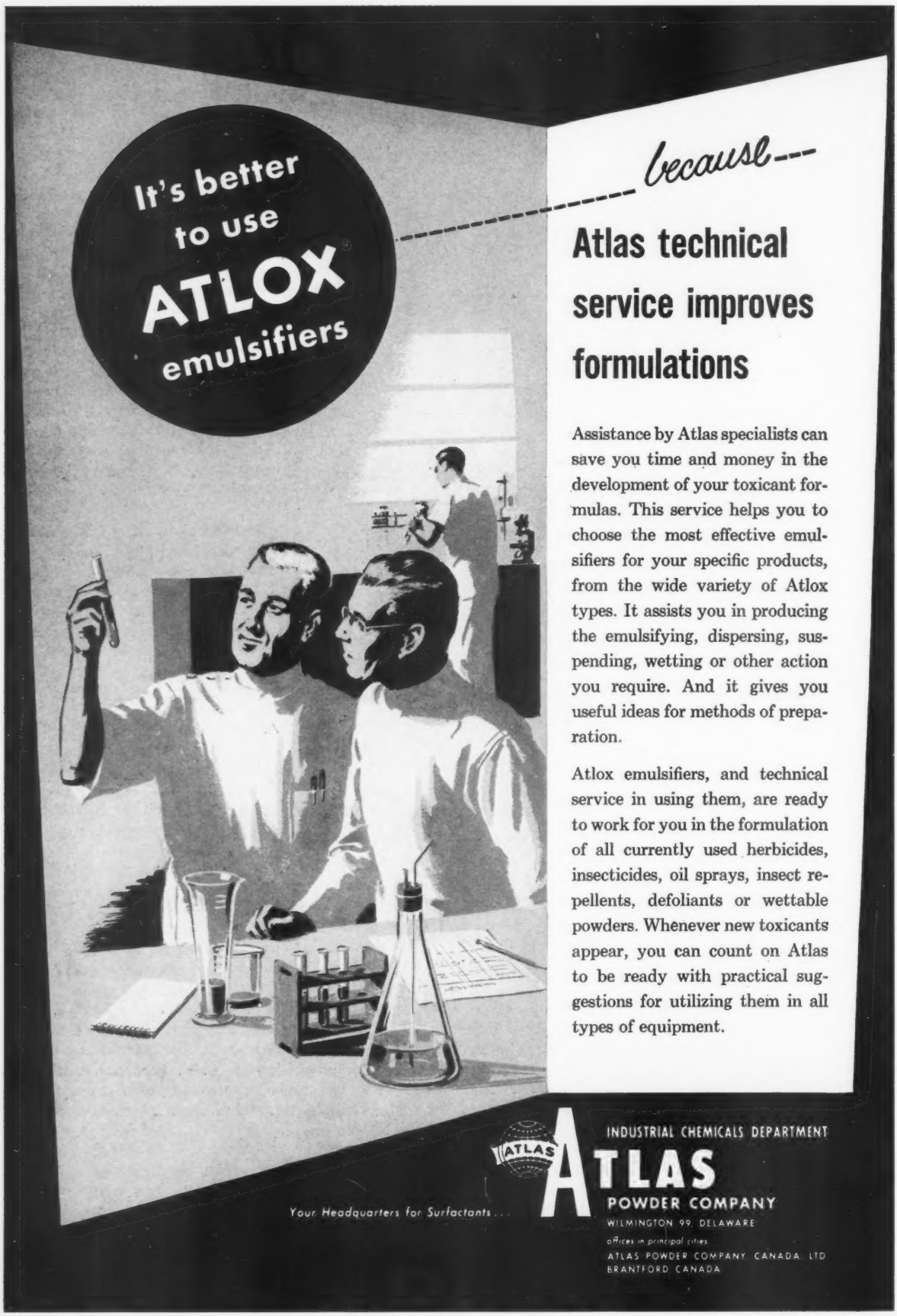
It grinds and impregnates the undiluted active ingredients to make the insecticide concentrates which formerly had to be shipped in from outside the state, supplying concentrates for the company's blending plants in Toltec, Phoenix and Yuma, Ariz., and Blythe, Cal.

The main plant is 260 feet long and 50 feet wide, covering 13,000 square feet, with a 20 foot clearance to the eaves and trusses. It was designed and built under the supervision of M. F. Wharton, secretary-treasurer and technical director of Arizona Fertilizers. The adjacent administration building covers 2400 square feet.

Big Freight Saving

Economic advantages of the new plant are the saving of freight on concentrates which formerly had to be shipped in from considerable distances, a ready source of fresh-mixed insecticides large enough to take care of any foreseeable requirements, a source of supply for special concentrates and mixes and ability

(Continued on page 72)



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Ag Limestone Figures Show Usage in 1952

FARMERS in the United States applied a total of 27,252,045 tons of liming material to the soil in 1952 according to a report from the National Agricultural Limestone Institute.

The tonnage is approximately one per cent less than the amount used in 1951 and more than 10 per cent less than the peak tonnage of 1947 when 30,283,000 tons were applied.

Highest application of lime, before 1936, never exceeded 3.5 million tons in any one year. In 1936 farmers were encouraged under what now is known as the Agricultural Conservation Program to use greater quantities in order to improve the fertility and productive capacity of their soils as well as to increase the nutritional value of the food and feed produced.

Highest Tonnage

Under the impetus of this program the highest tonnage used in a single year was reached in 1947. Appropriation for the 1948 program was drastically curtailed and the tonnage used dropped approximately 25 per cent.

In 1950 usage had reached nearly 30 million tons but has been dropping steadily since then. The reduction has not been uniform throughout the country and in fact in some areas there was a substantial increase over previous years. Individual state totals for 1952 with a comparison to 1951 and the estimated annual needs are shown below.

NSC Sees Drop

The National Soil Conservation Committee reports that best informed sources are predicting a further reduction in tonnage for 1953, despite the fact that usage is only about a third of the 80 million tons recommended as an annual application by leading agricultural authorities.

The downward trend appears inevitable as long as farm income continues to decline and all farmers are not fully informed of the benefits of an adequate liming program, NSCC says. The Committee adds that "until such time as usage more nearly approaches the need, the food consuming public must be concerned with the mineral deficiencies of their diets stemming from production on an impoverished soil." ◆

Report of Tonnage of Agricultural Limestone in U. S. in 1952 Compared with Tonnage Reported in 1951 and Annual Application Needed

STATE	NEEDS	1951	1952	STATE	NEEDS	1951	1952
Ala.	1,325,781	195,825	172,608	Neb.	1,250,000	52,706	115,017
Ark.	758,210	279,755	249,049	N. H.	234,666	37,267	33,081
Cal.	153,183	19,367	24,687	N. J.	360,827	180,220	174,606
Colo.	0	502	0	N. Y.	2,425,500	825,347	849,779
Conn.	178,350	67,789	61,463	N. C.	2,348,667	485,975	429,750
Del.	141,750	65,491	59,970	N. D.	0	500	83
Fla.	862,500	321,463	403,704	Ohio	4,900,000	2,311,142	2,641,646
Ga.	1,971,158	375,164	339,123	Okla.	1,797,231	345,189	278,421
Ill.	8,006,667	4,156,281	3,476,089	Oregon	497,167	82,511	75,158
Ind.	4,437,400	2,614,622	2,783,451	Pa.	2,665,623	1,304,645	1,202,061
Iowa	7,700,000	3,192,384	3,201,820	R. I.	27,136	13,069	13,099
Kansas	2,327,573	724,618	829,395	S. C.	1,680,000	122,995	136,543
Ky.	4,640,911	1,069,661	1,036,412	S. D.	300,000	15	115
La.	927,150	134,672	131,608	Tenn.	2,625,000	602,482	603,327
Maine	432,000	61,485	54,725	Texas	1,822,000	112,506	107,424
Md.	676,659	309,635	293,037	Vt.	362,750	86,184	71,656
Mass.	280,000	64,841	55,078	Va.	2,700,000	855,686	904,777
Mich.	3,725,050	601,280	718,162	Wash.	262,500	28,926	41,128
Minn.	3,377,250	411,043	442,664	W. Va.	549,750	295,325	264,857
Miss.	2,035,340	352,169	315,928	Wis.	4,162,444	1,790,248	1,826,939
Mo.	5,500,000	3,027,807	2,829,452	Wyo.	9,000	4,126	4,048
Mont.	5,000	100	105				
				TOTALS	80,442,193	27,583,018	27,252,045

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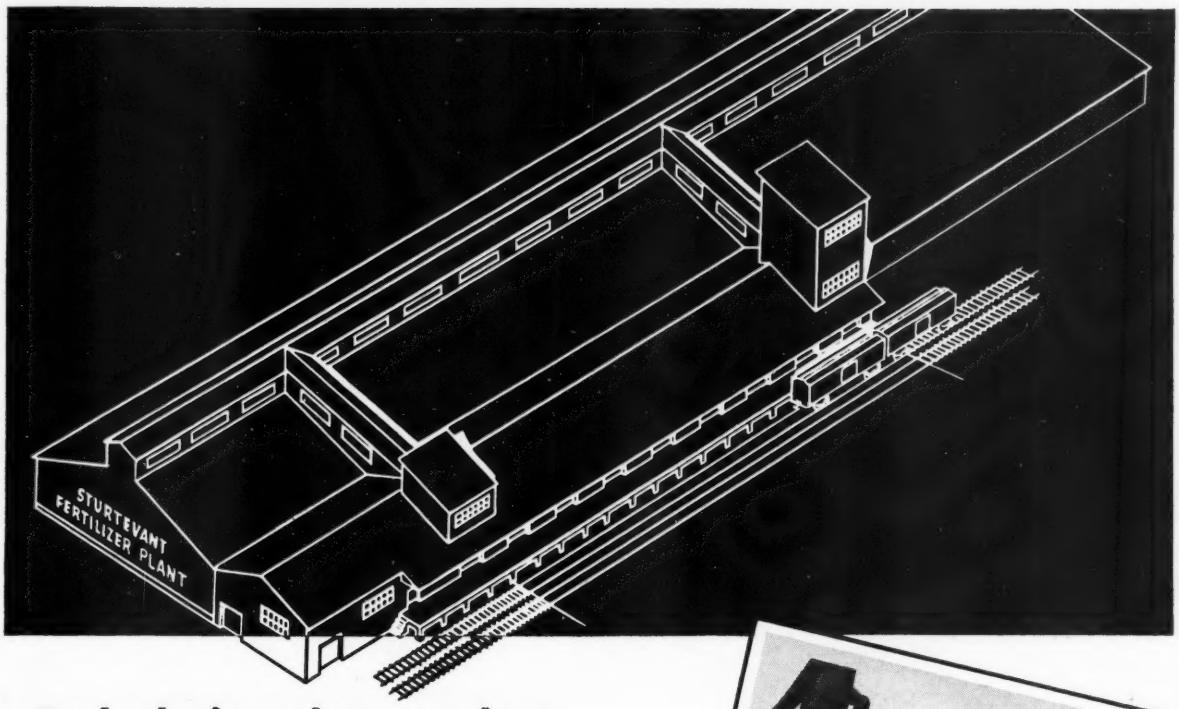

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Oct. 12-17 at the Shoreham:

Fertilizer, Pesticide Control Men To Meet

RECORD–BREAKING attendance and latest reports on such subjects as labeling, fertilizer-pesticide mixtures, soil conditioners, new farm chemicals and custom plant food mixes will highlight a week of meetings by control officials from all parts of the United States and Canada.

In all, four groups of control officials will gather during the week of Oct. 12 to 17 in the Shoreham Hotel, Washington, D. C., to summarize the year's activities and make plans for dealing with a multitude of problems during the coming year.

Addresses by leading figures in the fertilizer and pesticide industry are planned.

Here's how the schedule shapes up:

AOAC Is First

From Monday through Wednesday the Association of Official Agricultural Chemists will be in session in the hotel.

The Association of American Feed Control Officials will move in Wednesday and Thursday, with the Association of American Fertilizer Control Officials set for a full day of reports and discussions on Friday.

Concluding the meetings will be the annual get-together of the Association of Economic Poisons Control Officials on Saturday.

Discussions on soil conditioners, soil analysis, foods, feeding stuffs, pesticides, fertilizers and allied chemicals all are on the agenda for the AOAC.

Also scheduled is a special program on methods and techniques in examining extraneous materials in foods.

Dinners honoring members of the Association of American Fertilizer Control Officials will be given by both leading fertilizer trade organizations. American Plant Food Council is host Oct. 15, while the National Fertilizer Association will be host the following evening for the officials. The AAFCO States Relations Committee will meet Oct. 15 at 8 P. M.

The feed control officials also have a heavy program, plans for which now are being completed by AAFCO officials.

Aaron Baxter, Dr. Vincent Sauchelli, Jackson B. Hester, J. O. Hardesty and R. M. Magness are some of the nationally known speakers who will address the fertilizer meeting, which also is expected to have several industry representatives in attendance.

Truitt, Coleman to Talk

Paul T. Truitt, president of the American Plant Food Council and Dr. Russell Coleman, president of the National Fertilizer Association, will complete the list of speakers.

Baxter, Coke Oven Ammonia Research Bureau, will air the problem "Evaluation of Secondary Elements in Fertilizer."

An important summary, on the "Present Status of Surface Active Agents for Fertilizer Use," will be given by Dr. Sauchelli, who is director of agricultural research for Davison Chemical Corp.

Hester has been asked to report to the group on "Foliar Application of Plant Nutrients." He is soil technologist for Campbell Soup Co.

Hardesty and Magness, both of the USDA'S Beltsville center, will present latest information on "Progress in Fertilizer Granulation."

Problems of the fertilizer control official will be discussed by Ernest A. Epps Jr., state chemist for Louisiana.

Parks A. Yeats, of Oklahoma, president of the association, will give the keynote address to open the session.

Reports from association investigators representing many states will supplement the formal talks.

Pesticide Officials

Like the fertilizer control men, the pesticide officials have a full schedule for the Saturday meeting.

President Rodney C. Berry, Virginia state chemist, will open it with a report highlighting problems and activities of the AEPCO during the past year.

Berry is expected to have some comments on the fertilizer-pesticide combinations, having last month given his views at the National Agricultural Chemicals Association convention at Spring Lake, N. J.

He will be followed at the rostrum by Dr. K. Starr Chester, supervisor of Battelle Memorial Institute and Van Miller, vice president of the National Better Business Bureau.

Dr. Albert B. Heagy, association secretary-treasurer, said committee reports would fill out the program.

The meetings will mean a very busy week for some officials who belong to two or more of the associations. ◆

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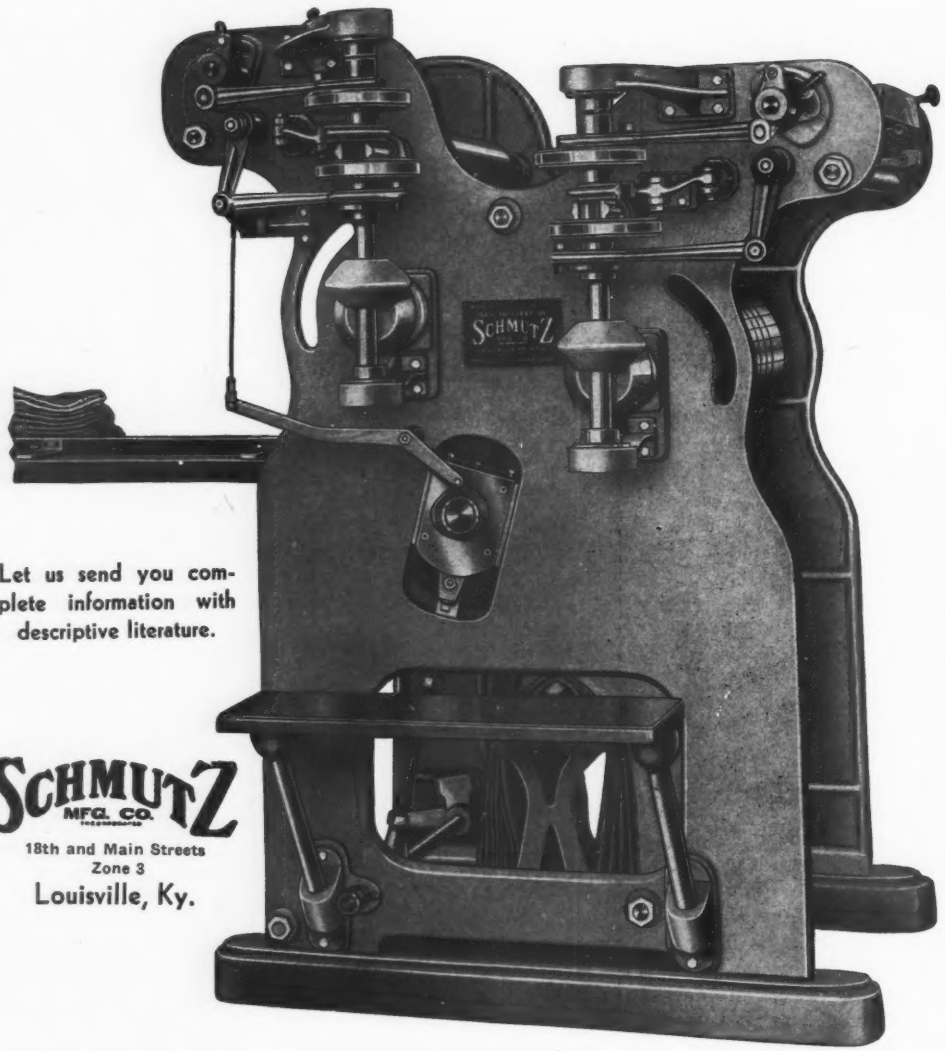

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10-4 Dust and Spray Improvement

Increases in the three E's—efficiency, effectiveness and economy—of agricultural dusts and sprays are discussed in a new R. T. Vanderbilt Co. technical bulletin on diluents, dispersing agents and stickers. The illustrated eight-page brochure is a condensation of the latest technical information on Pyrax ABB, Continental Clay, Darvan and Veegum. **Code Number 10-4.**

10-5 Soil Testing

A new 72-page catalog from Soiltest Inc. describes and illustrates the company's extensive soil testing equipment. One section is devoted to apparatus for chemical and agricultural soil tests. Also included are sections on general laboratory apparatus, ovens, scales, mixing machines and laboratory furniture. **Code Number 10-5.**

10-6 Aquafil

"Scientific findings about fertilizer conditioners prove diatomaceous earth improves performance, reduces production costs and builds bigger profits . . ." This statement is contained in a booklet from Aquafil Co., makers of Aquafil conditioner. Facts and figures on performance of its product which should be of interest to the fertilizer mixing industry also are given. **Code Number 10-6.**

10-7 Infrared Analysis

Six case histories from the files of leading chemical manufacturers are shown in "Product Control Through Infrared Analysis," published by The Perkin-Elmer Corp. The company, which manufactures infrared spectrometers, flame photometers and electro-optical instruments, explains each of the six companies' problem, its solution, instrumentation and conclusions. **Code Number 10-7.**

Use card at right to get information on products and bulletins. For additional requests write FARM CHEMICALS on company stationery, giving appropriate Code Numbers.

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10-11 Chemical Pump
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10-8 Diaphragm Valves

Why its valves have been widely accepted by the fertilizer industry is explained in a 36-page bulletin from Hills-McCanna Co. The valves assure tight shutoff against scale, rust or other solid particles that might be carried along by the material being valved, according to the company, and maintenance is a minor problem. **Code Number 10-8.**

10-9 Sulfur Report

"Sulfur . . . a Raw Material Survey," is the title of a booklet prepared by Midwest Research Institute. It outlines the problem and contains sections on sulfur balance in U. S. and the free world, major sulfur sources, major industries consuming sulfur or acid, manufacturing cost of sulfuric acid and future trends in sulfur supply. **Code Number 10-9.**

10-10 Spray Nozzles

If you use liquids in the form of sprays, Schutte and Koerting Co. says its SK Spray Nozzles are designed for your operations. Information on various types and their application, spray characteristics, construction and operation is given in recent literature from the company. **Code Number 10-10.**

10-11 Chemical Pump

A pump, specifically built for acids and corrosive salts, is manufactured by Warren Steam Pump Co., Inc. Its rubber lining is custom-made to meet individual requirements and is resistant to both chemical corrosion and physical abrasion. Dimensions, specifications, service characteristics, construction and other factors are discussed in company literature. **Code Number 10-11.**

10-12 Fertilizer Blender

Up to 2,000 pounds of fertilizer can be blended within three minutes, in one simple operation through the use of the new Baughman feed and fertilizer blender, according to company literature. More information on the blender, including its advantages, diagrams and specifications, is available. **Code Number 10-12.**

10-13 Laboratory Dry Blender

A laboratory dry blender, designed for research and development of many blending problems has been produced by Patterson Foundry and Machine Co. The clear, rigid plastic blender can be used to study effects of changes in blending times, effects of changes in consistency of raw materials, density differences, etc. **Code Number 10-13.**

10-14 Gross Bagger

Richardson Scale Co's new bulletin pictures and describes its semi-automatic gross bagger. The new hand-operated scale weighs and fills textile or multi-wall bags with bulk fertilizer, feed and chemical products. The bulletin gives in detail answers to any questions you may have on the bagger. **Code Number 10-14.**

10-15 Chemical Catalog

To celebrate its 75th year in the industrial chemical field, Consolidated Chemical Industries, Inc. has published a 104 page catalog. The book serves a dual purpose—tells the industry all about its 75 year history, and gives complete information on all its products, including fertilizers. **Code Number 10-15.**

10-16 Engineering Service

Consultation, analysis, design and construction in the automatic control field are offered by CDC Control Services, Inc. "A Proposal for Managements With Vision" is the title of a new booklet issued by the company, describing these services. **Code Number 10-16.**

10-17 Dust Collector

A dust collector which cleans itself—that's what Pangborn Corp. says its CH-3 Self-Cleaning cloth screen dust collector is. Through use of the unit operating and maintenance costs can be lowered because of its continuous automatic dust collection, constant air volume and suction and positive reverse flow filter cleaning, according to the company. **Code Number 10-17.**

10-18 Continuous Ammoniator

Anhydrous ammonia and solutions can be increased in formulas with use of a continuous ammoniator with a capacity of up to 12,000 pounds an hour of nitrogen solution according to Fertilizer Engineering & Equipment Co. The solution is composed of 55.5 per cent ammonium nitrate, 26 per cent free ammonia, 18.5 per cent water and 40.8 per cent total nitrogen. Information on the ammoniator is available. **Code Number 10-18.**

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How Do You Name A Pesticide?

It isn't easy to avoid confusion, according to this A.M.A. report

ONE of the major impediments in the advancement of scientific knowledge is the confusion resulting from the multitude of names that exist for a particular chemical.

A compound that has become familiar to the public may be identified by a chemical name, a common or generic name, an official name, trade, brand or proprietary names or a popular or nonproprietary synonym. The growing number of compounds and the variety of their designations are overwhelming to all but those with sufficient time and compelling interest to keep abreast of current terminology.

Certain names are justified, and each type of nomenclature has its own strong adherents. For example, many believe that chemical names make unmistakably clear the structure and composition of a compound. Such names are accurate and descriptive; nevertheless, they have universal meaning only to chemists and certain other specialists.

To the technically uninformed or to those in other scientific pursuits, chemical descriptions are frequently too cumbersome to use and too difficult to remember.

In the early use of a new, complex substance, several chemical descriptions may appear in the literature, which may contribute to confusion among users and result in mistakes in use and in treatment of poisoning. Many chemical names are so unwieldy that laboratory nicknames compounded from initials of the component groupings in the substance have become popular.

Some abbreviated designations such as BAL, DDT, TNT and 2, 4-D are so firmly established in the public consciousness that a change to a more descriptive name is now a formidable problem. The difficulties engendered by an increasing use of trivial and trademarked initials, numbers or combinations of the two should be obvious to all.

This report on pesticide names was prepared by the Committee on Pesticides, the Council on Pharmacy and Chemistry of the American Medical Association. It was released by Council Secretary R. T. Stormont, as the tenth in a series of statements by the pesticide committee. It is intended as a brief review of the history of naming pesticides and the problems involved.

Tendency To Conceal

Proprietary, brand or trademarked names for chemicals are subject to similar limitations. Although trade names are necessary and useful tools of our competitive system, they have a tendency to conceal rather than to reveal the nature of the product. The myriad of fanciful names, which are trademarked for preparations containing a widely accepted chemical, predispose prescribing and use by name rather than by nature of the compound and action desired.

Labeling problems, confusion with names for unrelated and sometimes more dangerous preparations, and the exacting requirements of scientific literature preclude dependence solely on proprietary names as a means of identification. This has led to the coining of generic names as a direct and simple means of identifying the chemical compounds in commercial preparations. An estimate of their value to manufacturers and consumers alike can be gained from the history and experience of the procedure in this country.

History

One of the first, if not the initial, organized attempts to standardize the popular nomenclature of new chemicals was undertaken in 1911 by the Council on Pharmacy and Chemistry. Realizing the need for a common name for the chief constituent in the various brands of the blood-pressure-raising principle of the adrenal glands, the Council adopted epinephrin(e) as such a term.

Further impetus to the Council's action was provided by the Federal Trade Commission in 1917. In carrying out the provisions of the Adamson Act, the Commission licensed American firms to use U. S. patents on certain synthetic drugs owned by German citizens. However, it required all licensees to use generic designations for the article. Arsphenamin(e), barbital, cinchophen and procain(e) were the common names required to be used in association with the drugs trademarked respectively as Salvarsan, Veronal, Atophan and Novocain.

The next significant step in the medical employment of generic names occurred in 1920 when a prominent pharmaceutical firm began using short, coined, nonproprietary names in connection with its trademarked names. Prod-

ucts were marketed under the trade name followed by the statement "brand of____, a nonproprietary name."

The generic names were coined by the firm and accepted by the Council on Pharmacy and Chemistry as nonproprietary synonyms for inclusion in "New and Nonofficial Remedies." In several instances, the coined name ultimately became the official name for the drug by virtue of its adoption by the United States Pharmacopoeia.

The celebrated "aspirin" and "cellophane" court decisions further stimulated manufacturers to use generic names in conjunction with trade names. In both cases, it was ruled that the firms lost their trademark rights to "aspirin" and "cellophane" because the names had become accepted as popular designations for products represented by these names and, therefore, were not associated in the public mind as trade names. The pharmaceutical industry, as a group, was the most sensitive and immediately responsive to the legal precedents that these decisions established.

As a consequence, an overwhelming majority of the manufacturers of prescription chemicals cooperate with the Council in the selection of generic nomenclature for drugs.

Need for Names

The need for uniform and universally recognized generic designations for pesticides has been slower to develop. Until World War II comparatively few and relatively simple inorganic and organic compounds were introduced and used at a rate sufficient for users to become acquainted with their nature. World War II fostered a technicologic revolution in the pesticidal chemical industry.

The industry's growth and increased influence, plus a rise in the number and complexity of its products, focused attention on the advantages of having short, common names that technicians and users alike could conveniently remember. This prompted various public health and agricultural agencies to consider the use of coined common names for pesticides.

In April, 1947, the newly formed Interdepartmental Committee on Pest Control, a group composed of representatives of the various departments of the federal government interested in pest control approached the Council on Pharmacy and Chemistry concerning the development of acceptable, nonproprietary, common names for new economic poisons. The Council agreed to collaborate with the Interdepartmental Committee for the purpose of unifying and standardizing generic name selection for chemicals used as drugs, as pesticides, or interchangeably for both purposes.

The relationship between the Council and the Interdepartmental Committee existed on a direct, collaborative basis for three years; then the Committee on Pesticides was formed, and it assumed the responsibility for the Council's part in this public service activity.

A list of the common names for pesticidal chemicals adopted by the Interdepartmental Committee, which have been concurred in by the Council or the Committee on Pesticides, is presented in Table 1.

Guiding Principles

The following basic principles have been adopted and employed by the Council on Pharmacy and Chemistry, the Committee on Pesticides and the Interdepartmental Committee on Pest Control in the consideration of generic names for chemicals:

Type of Names Acceptable—Names that are not in conflict with recognized proprietary or nonproprietary names in the same or other fields of commerce are acceptable. Proposed name should be short and distinctive in both sound and spelling and should avoid confusion with or encroachment on those already in use.

Initials and numbers, alone or in combination as terminal designations, are considered unacceptable. When practicable, common names may conform to accepted scientific terminology; however, rigid conformity to chemical, biological or other rules of nomenclature, to the exclusion of practical considerations pertinent to the class of compounds involved or the major users affected, is not intended.

Types of Compounds Eligible—Eligible compounds are those that have been defined by the selecting agency identified with the field of commerce in which principal use of the chemical may be expected. The name should apply to the pure basic chemical to avoid multiple and dissimilar names for salts, esters, isomers, homologues, dosage forms and other variations of the parent compound.

When a compound is not sufficiently well known, when it is not widely used or only holds promise of use, or is otherwise unsuitable for identification by a coined, common name, selection may be deferred or rejected until conditions warrant reconsideration.

Nature and Time of Application—Proposals for common names may be initiated by manufacturers, formulators, distributors of the basic chemical or recognized noncommercial organizations interested in the proper utilization of the substance. The style of application varies with the selecting agency, which is guided by the needs of those who will ultimately use it. In general, information on the physical and chemical nature, mammalian toxicity and demonstrated uses of the compound are required. Data on existing trade names, laboratory synonyms and related nontechnical items may be required.

Common names should be proposed prior to commercial introduction of the chemical. The final selection is based on cooperative consideration by various industrial, scientific and professional organizations which share a common interest in the employment of the chemical.

Ingenuity Needed

Ingenuity is required to coin generic names that are short, distinctive and not in conflict with terms already in use. Two systems of nomenclature have been used on an organized basis for this purpose. The first system employs pseudochemical terms, which suggest the nature and structure of the compound. Benzene hexachloride, borax and phenobarbital are examples. The second method utilizes fanciful terms, which bear biological, historical or less tangible relationships to the chemical to which it is applied. Dieldrin,

nicotine and penicillin are illustrations of this approach. Both techniques are open to objections; one of the most important is the tendency for names to become multisyllabic as the possibilities for selection diminish. Unfortunately, this is an inevitable consequence of scientific accomplishment.

As the volume of new and useful compounds expands, the number of acceptable two or three syllable word combinations decreases. If distinctiveness in sound and spelling are additional requirements, the choice is further limited. It is, therefore, of utmost importance that the various problems of generic name selection be thoroughly understood.

Current Problems

The trend toward trademarking names that are the same or nearly the same as accepted chemical and generic designations is one of the more highly detrimental of current practices. It is a problem common to pesticides as well as to drugs.

Evidence of this condition is the misappropriation of the coined, common names lindane, chlordane and warfarin, which have been registered as proprietary names outside the country of their origin. These acts not only preclude the general use of otherwise acceptable popular names in the countries where pirating occurs but they also contribute to misunderstanding and confusion in foreign literature.

Aside from etymological difficulties, they impose unnecessary legal hardships on exporters and international brokers of pesticidal chemicals. In addition, the unethical practice of utilizing names familiar to one group of chemicals and applying them to substances of another classification with only minor modifications in spelling is of little consequence at the present, but it conceivably can grow if the increasing demands and decreasing possibilities for new names continue.

The establishment of a unified system of nomenclature is the keystone on which rests all educational efforts to extend to the public the benefits of new advances. The development of generic names for chemicals should not be undertaken in a manner that creates further confusion nor should it be in conflict with legal or other requirements of the public interest. It is exceedingly difficult, however, to coin common names that do not infringe or otherwise encroach on proprietary or nonproprietary names in various fields.

For this reason, it is sometimes necessary to tolerate more than one nonproprietary designation for a given chemical with multiple uses. When such a situation exists, it is not always practical or feasible to substitute a new name for existing names that are widely accepted in different fields of commerce or in various parts of the world. A more convenient and practical solution is to use interchangeably the adopted nonproprietary names as accepted synonyms for the chemical in the country or technical field in which they now are not officially recognized. This would adjust an otherwise confusing situation and universalize scientific language.

Intranational and international agreement on terminology can minimize the frequency of these occurrences and facilitate suitable compromise. Agreement can come only through cooperation with and appreciation for the peculiar needs of the various groups served by each of the official and professional organizations responsible for formulation of generic names.

A greater exchange of information, standards, proposed terms and other pertinent data by responsible agencies here and abroad would assist in creating the desired accord. The committee hopes that greater consideration will be given to this concept in the future. ◆

TABLE 1.—Representative Names for Pesticidal Chemicals Used as Economic Poisons

Generic Name	Chemical Name	Trade Names*	Other Names and Synonyms	Major Uses
Aldrin	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-dimethanonaphthalene	Octalene	Compound 118	Insecticide
Allethrin	dl-2-Allyl-4-hydroxy-3-methyl-2-cyclopenten-1-one esterified with a mixture of cis- and trans-dl- chrysanthemummonocarboxylic acid	Pyresyn	Allyl cinerin Synthetic pyrethrins	Insecticide
Dieldrin	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4,5,8-dimethanonaphthalene	Octalox	Compound 497	Insecticide
Methoxychlor	1,1,1-Trichloro-2,2-bis (p-methoxyphenyl) ethane	Marlate	DMDT Dianisyl analogue of DDT	Insecticide
Parathion	0,0-Diethyl-0-p-nitrophenyl thiophosphate	Aphamite, Phoskil, Kilphos, Corothion, Paraphos, Genithion, Penphos, Mackothion, Vapophos, Plantthion, and Thiophos	Compound E 605 Compound 3422 DPP DNTP AAT	Insecticide
Toxaphene	Chlorinated camphene (67-69% Cl_2)	Phenatox, Penphene, Gy-Phene, Terpene, Phenacide, Toxakil, Kilphene, Chlorphene, and Alltox	Compound 3956	Insecticide
Warfarin	3-(a-Acetonylbenzyl)-4-hydroxycoumarin	Dethmor, Rat-deth, and Ro-deth	Compound 42 WARF Compound 42	Rodenticide

* The list of trade names, other names and synonyms is not intended to be complete but is given to illustrate the complexity of the nomenclature.

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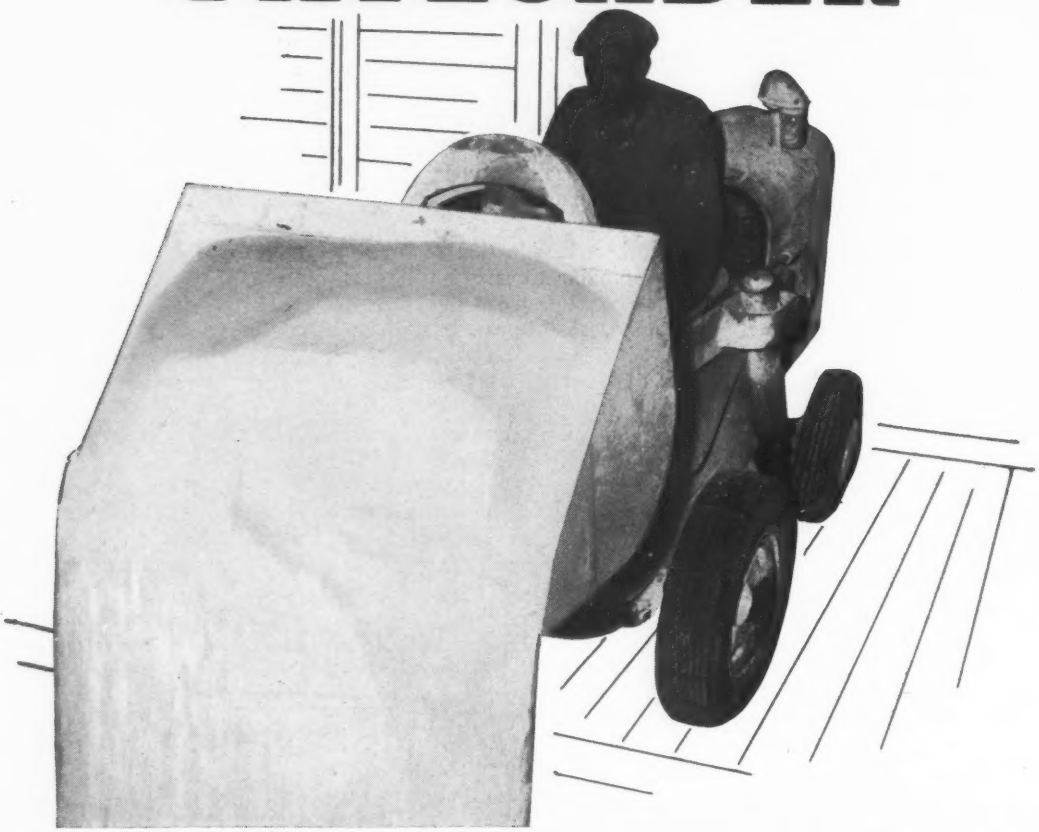

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Have you returned your questionnaire?

Fertilizer Safety Group Seeks Industry Data

FERTILIZER manufacturers all over the country this month are receiving important questionnaires from the Fertilizer Section of the National Safety Council.

J. Lauren Shopen, who described the nature of the questionnaire in a letter to FARM CHEMICALS, is urging cooperation of industry members in the project so that results may be as nearly representative as possible of the safety record of the industry.

According to Shopen, chairman of public relations for the recently formed section, the information requested is in regard to total man-hours worked during the calendar year, total number of lost-time accidents and total days lost and charged.

Pinpoint Accidents

In addition, the questionnaire is broken down in such a manner that it will be possible, when all returns are in, to pinpoint the accidents to their place of occurrence and to the type of operation involved.

The data also will furnish information as to fertilizer plant units who are willing to participate in the 1954 safety contest sponsored by the section.

Shopen added that the questionnaire solicits information as to how the Fertilizer Section can be more helpful to the industry.

"In view of the apathy with which many questionnaires are viewed," Shopen declared, "and considering the vital importance of this information we believe it most important for fertilizer personnel to cooperate."

The section hopes to find means to reduce the insurance rate for the fertilizer industry throughout the country by studying the statistics gathered with the questionnaire.

"Terrific injury and life toll caused by accidents in fertilizer plants" was labeled as the motivating factor in getting information on fertilizer safety.

Increased Emphasis

The importance of increased emphasis on safety in fertilizer plants can be seen by glancing at the report of an NSC survey included with this article.

Of 41 types of work classified in the report, the fertilizer industry ranks third from the highest in frequency rate of disabling injuries per 1,000,000 man-hours.

The figure, 31.8, is considerably higher than the average for all industries, 9.06.

What's more, the severity rate for the industry, indicating time charges in days per 1,000 man-hours, is almost two and one-half times that for all industries. The figures are 2.36 and .97 respectively.

In sending out the questionnaires to the industry the fertilizer group included a provoking summary statement by Stewart A. Washburn, NSC staff representative, on data gathered last year by the section covering accident experience in 1951.

Text of his statement follows:

In September of 1952 the Fertilizer Industry Advisory Committee of the Chemical Section sent out a questionnaire to some 1,200 domestic and foreign plants asking for information on the 1951 accident experience of the fertilizer industry.

Questionnaires were returned from 180 operating units representing close to a 15 per cent response which, as this type of questionnaire survey goes, is very good. As will be shown later, this return has a much greater significance than the 15 per cent response would seem to indicate.

Of the 180 returned questionnaires, those from 174 domestic operating units were usable. One from a foreign combine also was usable.

No Time Charges

Fourteen returns listed the number of injuries reportable under the American Standard Method of Compiling Industrial Injury Rates, as was asked in the questionnaire, but failed to include time charges. Therefore the exposure used to compute frequency was a little higher than that used to determine severity.

The 174 domestic fertilizer producers reported a total exposure for the year 1951 of 37,923,000 hours with 1,260 lost-time accidents and a total time charge of 83,275 days. The frequency rate for the reporting units is 31.80 lost-time accidents per million man-hours of exposure; the average frequency rate for National Safety Council industrial members reporting for 1951 is 9.06.

The severity rate computed from the adjusted figures is 2.36 days lost per 1,000 man hours of exposure; the industry average for Council industrial members reporting for the year 1951 is 0.97.

The foreign exposure reported was 3,750,000 man hours with 561 lost-time accidents and 4,416 days

charged. The frequency rate for this exposure is 182.44 and the severity rate is 1.44. (These figures are given for the sake of comparison only. They do not affect the exposures and rates given elsewhere in this report).

Domestic Units

Forty domestic operating units with individual exposures of 50,000 hours or less, reported a total exposure of 1,205,000 hours, and had a group frequency rate of 43.98 and a group severity rate of 1.05.

In this group the individual frequency rates varied from 0.00 to 117.65; the individual severity rates varied from a low of 0.00 to 10.71. Nineteen reporting units within this group had both a zero frequency and a zero severity rate.

Forty-seven operating units with individual exposures of from 51,000 to 100,000 hours reported a total exposure of 4,175,000 hours. This group has an average frequency rate of 28.26 and a severity rate of 10.38. In this group the individual frequency rate varied from a low of 0.00 to 117.02; the severity rates varied between 0.00 and 51.72.

Fifty-eight units operating between 101,000 and 250,000 hours reported a total exposure of 8,749,000 hours, with frequency rate of 20.91 and a severity rate of 1.96. The individual frequency rates for this group varied from a low of 0.00 to 222.22; the severity rates varied from 0.00 to 54.34. Of this group 19 reporting units had a zero frequency and severity rate.

Finally, 29 units, with individual exposures greater than 251,000 hours, reported a total exposure of 23,794,000 hours. The frequency rate for this group was 38.08 and its severity rate 1.326. The individual frequency rates in this size group varied from 0.00 to 587.85. The severity rates varied from 0.00 to 9.58.

For this same year, 44 member fertilizer companies reporting to the National Safety Council had an average frequency rate of 14.39 and a severity rate of 2.38. The Bureau of Labor Statistics reports a preliminary frequency rate of 22.4 for fertilizer industry in 1951.

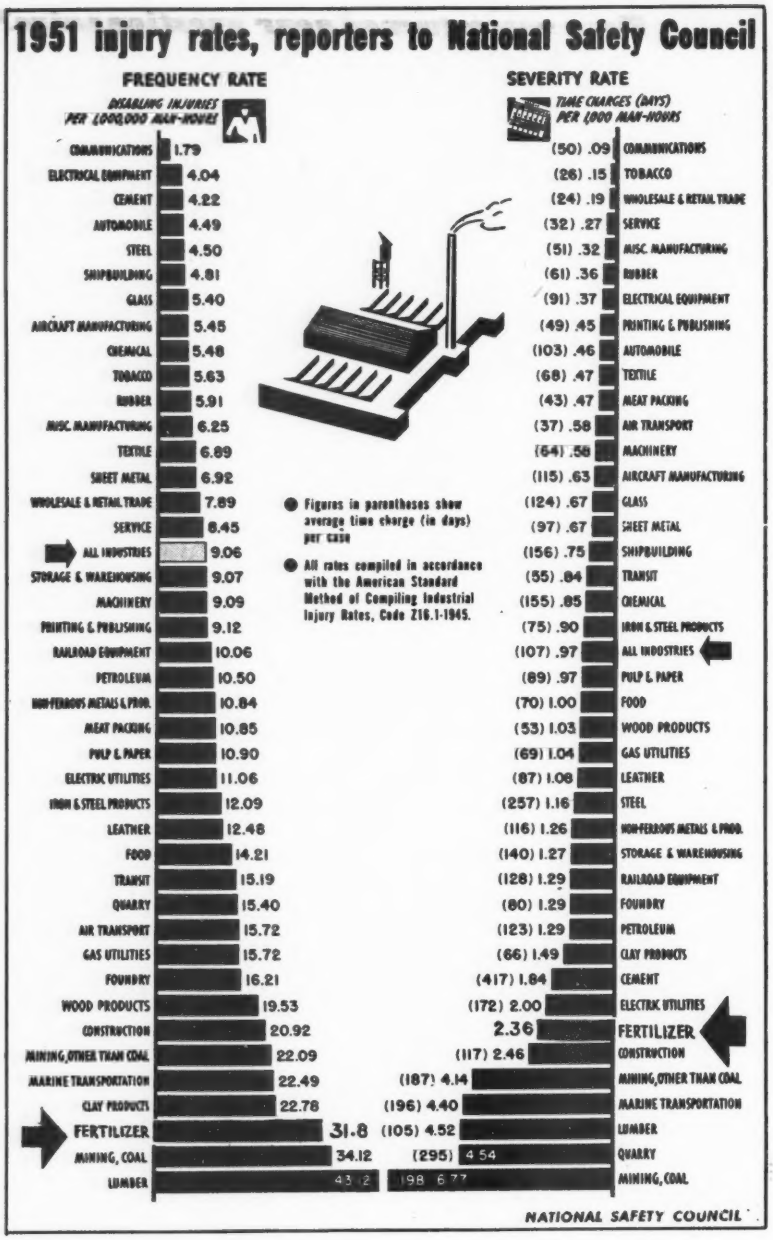
As was suggested earlier this survey of the fertilizer industry's accident experience for the year 1951 has greater significance than the 15 per cent response would indicate. *The Annual Survey of Manufacturers: 1949-50* published by the U. S. Department of Commerce shows a total exposure for the fertilizer industry for the year 1950 of about 63,108,000 hours for 31,393 employes.

Figures are not available for 1951 hourly exposure; but because the 1950 figures are not significantly different from those of the period 1947 through 1950, it can be assumed that the 1951 figures also will be of this order of magnitude. If this is so, then the 38 million hours reported in this survey represent more than 60 per cent of the total industry exposure.

If then, 60 per cent of the industry exposure has a 31.80 frequency rate and a 2.36 severity rate, what would a picture of the total industry exposure look like?

It is probably safe to assume that both the severity and the frequency rates would be higher.

For of the two probable reasons for not reporting in this survey both indicate high rates. First no accident records and this usually means high rates, and second, accident records showing rates so high as to be embarrassing. ◆



FERTILIZER MATERIALS MARKET

New York

September 10, 1953

Sulfate of Ammonia

This material was reported moving slowly to fertilizer plants and stocks were said to be accumulating. Domestic producers were offering material at Atlantic ports at $47 per ton in bulk to meet foreign competition.

Nitrate of Soda

This material was reduced $4 per ton, effective September 1 and now is quoted at $53 per ton at the port in bags. Competition from similar foreign materials imported from Europe was said to be responsible for this reduction.

Ammonium Nitrate

Moving against existing orders and demand good from most sections.

Urea

Available for import at prices ranging from $127 to $135 per ton at Atlantic ports. Demand should increase shortly from large industrial users.

Nitrogenous Tankage

Prices range from $3.50 to $4.25 per unit of ammonia ($4.25 to $5.16 per unit N), according to production point, with demand fair for nearby shipment but not much interest in future positions. No offerings of foreign material were reported.

Castor Pomace

Some movement was reported for prompt shipment at approximately $29 per ton, f.o.b. production points. It is expected demand will increase shortly when more mixing plants get back into production.

Organics

Organics showed a somewhat firmer tendency, due to recent buying by the feed trade because of the increased demand for feed from drought areas caused by recent hot weather and lack of rain. Tankage and blood sold at $5 to $5.50 ($6.08 to $6.68 per unit N), f.o.b. eastern points. Linseed meal and cottonseed meal maintained a firm tone and soybean meal has advanced to $64 per ton in bulk, f.o.b. Decatur, Ill. for nearby shipment.

Fish Meal

Fish scrap has been selling at $125 per ton in bulk, f.o.b. eastern fish factories and meal was priced about $7 per ton higher. Imported material was in good demand at prices around $130 per ton at various ports.

Bone Meal

A better demand was noted for this material both from the fertilizer and feed trade. Steamed bone meal was available at $60 per ton f.o.b. production points but raw bone meal was not to be had.

Hoof Meal

Offerings rather limited and last sales made on basis of $6.25 per unit of ammonia ($7.59 per unit N), f.o.b. Chicago.

Superphosphate

This material was in good supply except in certain midwestern areas and prices were being maintained. Triple superphosphate was in good demand.

Potash

Potash is moving on contracts already made but the movement was not considered as good as this time last year. No price changes noted.

Philadelphia

September 10, 1953

There seems to be little or no strength to the raw materials market. Blood definitely is down in price, while other prices are about holding their own, but with the demand weak. Materials are in ample supply with the exception of ammonium nitrate. The price of nitrate of soda has been reduced four dollars per ton. Mixers still are slow in ordering out materials due them on contract and stocks are accumulating.

Sulfate of Ammonia.—While the market is reported steady with a little better demand, the movement still is slow and stocks are accumulating.

Nitrate of Ammonia.—The supply position continues exceedingly tight and no easement is looked for in the near future.

Nitrate of Soda.—Both domestic and Chilean have been reduced four dollars per ton. The former is now priced at $43.50 per ton in bulk, and $47 in bags. The Chilean price is $49.50 in bulk and $53 in bags. These are carlot prices. Movement is not active and supplies are ample.

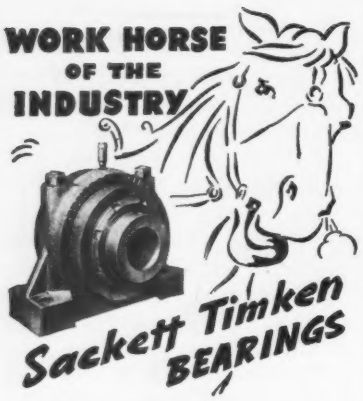
Cyanamid.—The strike is settled and it is said that no serious supply shortage had developed because of the temporary suspension of production.

Blood, Tankage, Bone.—Blood is weaker at $5 per unit of ammonia ($6.08 per unit N), New York basis, and $5.50 ($6.68 per unit N), Chicago. Tankage is not in very great demand at $4.50 to $5 ($5.47 to $6.08 per unit N) New York basis, and $5.50 to $6 ($6.68 to $7.29 per unit N) Chicago area. Steamed bone still is quoted at $60 per ton, and hoof meal $6 per unit of ammonia ($7.29 per unit N), Chicago basis.

Castor Pomace.—This is in rather slack demand at $30 per ton.

Fish Scrap.—There seems to be no unusual activity and menhaden meal is quoted at $132 per ton, with the market not very firm.

Phosphate Rock.—Shipments are reported as seasonally normal, with



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FERTILIZER MATERIALS MARKET

the demand not very active, and supply position satisfactory.

Superphosphate.—Market is very quiet with supplies ample, but mixers rather slow in taking contract deliveries. No change in price is noted.

Potash.—Withdrawals against contracts are said to be not so good as might be desired. It is hoped, however, that the movement will get much better during the coming few months.

Charleston

September 10, 1953

Rather little activity in the raw materials market is noted at the present time but interest in the basic materials is expected to increase now that Labor Day has come and gone.

Organics.—The market on fertilizer organics is relatively quiet with the domestic producers of nitrogenous tankage in a rather comfortably sold position at prices ranging from $3.15 to $4.65 per unit ammonia ($3.83 to $5.65 per unit N), bulk, f.o.b. production points. Imported nitrogenous tankage is limited in supply with offerings about $5 per unit of ammonia ($6.08 per unit N), in bags, c.i.f. Atlantic coast ports.

Castor Pomace.—The domestic production is currently approximately $28.50 to $30 per ton, in bags, f.o.b. northeastern production points. Importers' ideas of price range from about $35 to $40 per ton, bagged, f.o.b. cars South Atlantic ports, depending on the quality.

Blood.—The Chicago market on bagged unground blood is approximately $5.75 to $6 per unit of ammonia ($6.99 to $7.29 per unit N). The New York market is quiet with few if any offerings being made.

Potash.—Movement is fairly steady against contracts from domestic sources and no changes in price have been indicated.

Ground Cotton Bur Ash.—This source of carbonate of potash, particularly adaptable for use in tobacco fertilizers, is available for prompt and future shipment at prices approximating the delivered cost of domestic sulfate of potash. Analysis currently is 38 per cent to 42 per cent K_2O.

Superphosphate.—Normal superphosphate is in adequate supply and movement to mixers is somewhat behind compared with last season. Triple superphosphate continues short of demand. Prices are steady.

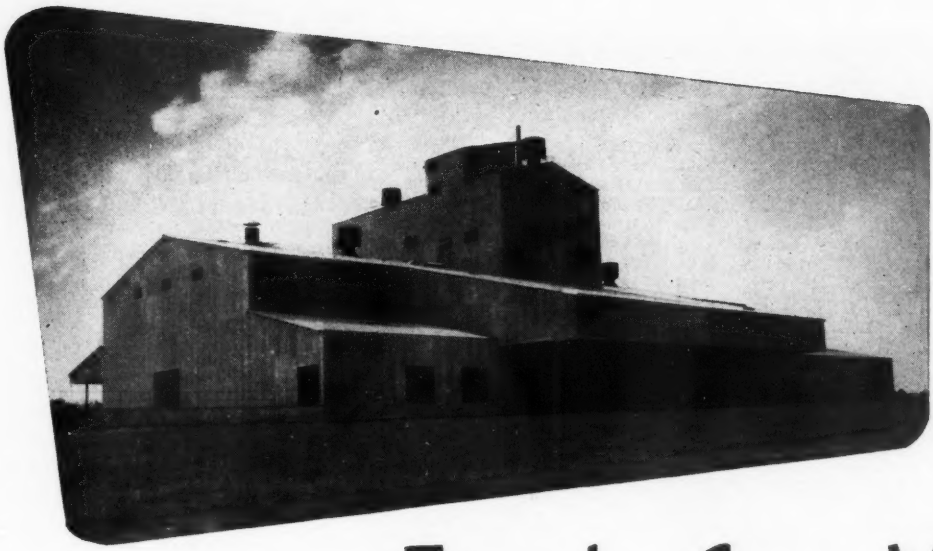
Phosphate Rock.—Movements to domestic users are in seasonal proportions. Price situation is steady.

Sulfate of Ammonia.—Production continues at a good level and stocks are building up as movement to users is not as heavy as desired. Price remains unchanged.

Nitrate of Soda.—Effective September 1, imported Chilean nitrate of soda was reduced $4.00 per ton, making the new price in bulk $49.50 and in paper bags $53 carload lots, f.o.b. cars at port warehouse. Domestic price also has been reduced, making the bulk price $43.50 and in bags $47 f.o.b. production point.

Calcium Ammonium Nitrate.—Price continues at $51.25 per ton, in bags, f.o.b. cars at major Atlantic and Gulf ports.

Ammonium Nitrate. — Supply continues somewhat short of demand and the market is described as tight with prices unchanged.



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Industrial News

New Products New Plants New Appointments

Sen. Russell To Speak At NFA Meeting

One of the key figures to address industry members attending the National Fertilizer Association's fall meeting in Atlanta, Nov. 16–18, will be Sen. Richard B. Russell of Georgia.

The senator formerly was chairman, and now is ranking minority member of the subcommittee on agriculture appropriations. He also is a member of the committee on appropriations and a ranking minority member of the Armed Services Committee.

After serving two years as Georgia's governor, he was first elected to the upper chamber of Congress in November, 1932, and has been reelected for three full terms.

Convention headquarters will be in the Atlanta Biltmore Hotel. NFA members who plan to attend have been urged by the association to make their room reservations as quickly as possible.

'Plant Diseases' Yearbook Out

The USDA's 1953 Yearbook of Agriculture, "Plant Diseases," is off the press.

The 147 articles in the 992-page yearbook were written by USDA men, state agricultural experiment station and university personnel. It contains a 32-page section of color photographs designed to help readers identify many of the more important plant diseases.

Copies are available at $2.50 per copy from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Promoted by Julius Hyman & Co.

James J. Lawler

Lawrence F. Stayner

Two personnel changes have been made at Julius Hyman & Co. Division of Shell Chemical Corp.

Lawrence F. Stayner, former sales manager of the division, has been named assistant to the manager and will work directly with Fred W. Hatch, manager, on general division problems.

James J. Lawler will become sales manager after a brief special assignment in Shell Chemical's headquarters in New York.

W. R. Grace Gains Control Of Davison Chemical Co.

W. R. Grace & Co. gained control of Davison Chemical Corp. late last month after purchase of 180,000 shares of common stock at $40 a share.

Grace, at the close of business Sept. 29, owned beneficially and of record 414,569 shares of common stock and 24,280 shares of 4.60 per cent cumulative preferred stock Series A.

This represents 51.55 per cent of the total number of shares of common stock and 18.98 per cent of preferred Series A.

The company previously owned 234,569 shares or 29 per cent of Davison common stock.

J. Peter Grace Jr., president of Grace, called the expansion move "a further step in our program to broaden our interest in growth industries, particularly in the chemical field, which has been under way for several years."

Five directors were elected to the board of Davison Chemical Corp. at last month's board meeting, bringing it to its full complement of 15 members.

Those newly elected are G. L. Hatheway, Robert B. Hobbs, W. Griffin Morrell, Frederick L. Schuster and Charles E. Wilson.

Phillips Is Number 30

Phillips Petroleum Co. recently became the 30th corporation in American industry with total assets in excess of one billion dollars, according to a company announcement.

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Industrial News

Leaves APFC

Dr. John R. Taylor

Dr. John R. "Dugan" Taylor has resigned as agronomist for the American Plant Food Council to become sales manager of Grand River Chemical division, Deere and Co.

Dr. Taylor went to the Council in 1946 from the Fertilizer division of Virginia-Carolina Chemical Corp. Previously he had been a staff member of the Alabama Experiment Station.

His headquarters will be in the Utica Square National Bank Building, Tulsa, Okla., the division's main office.

Grand River Chemical division's plant, designed to produce 180 tons of ammonia, is located near Pryor, Okla., and is expected to be in operation by spring, 1954.

Smith Guano Co. Picks Site for New Factory

Arrangements have been completed for the erection of a fertilizer plant in Douglas, Ga., by C. O. Smith Guano Co.

The plant will cover a total of 65,000 square feet, according to C. O. Smith Sr., and will employ 75 persons in peak season.

Some raw materials will come from Smith's fertilizer plant in Moultrie, Ga. Phosphate will be produced.

Monsanto Transfers Three To Merchandising Division

Three members of Monsanto Chemical Co.'s Organic Chemicals division have been transferred to the company's Merchandising division.

The men, R. L. Olcott, D. W. Tator and T. A. Graven, all have been active in various phases of Monsanto's development of soil conditioners.

Olcott and Tator have joined the Krilium sales staff and are working in the recently developed application of the soil conditioner for use on tobacco seed beds. Olcott's headquarters are in Lexington, Ky., and Tator's, western Kentucky and Tennessee.

Graven has joined the division's development department, for the development of Krilium sales and application material for the greenhouse and nursery field. He also will do development work in other fields.

Parks Describes New Grace Nitrogen Plant

Grace Chemical Co.'s nitrogen plant, under construction at Woodstock, Tenn., will be in production by the latter half of 1954, according to Robert Q. Parks, manager of agricultural service.

When completed, the plant will operate 24 hours a day, seven days a week, with a two-week shutdown each year for repairs and maintenance, according to Parks.

Staff will be between 250 and 300, mainly engineers and technicians, with a payroll of more than $1 million a year, he added.

Oman Appointed

Dr. Paul W. Oman has been named leader of the USDA's Division of Insect Detection and Identification, Bureau of Entomology and Plant Quarantine.

He replaces C. F. W. Muesebeck, who becomes consultant in insect taxonomy for the department.

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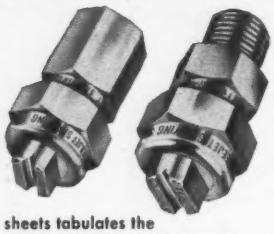

For effective spraying and lowest chemical costs TeeJet Spray Nozzles provide uniform spray pattern, exact spray type, and precision capacity. Performance specified in TeeJet bulletins and data sheets tabulates the exact kind of performance each nozzle will give. You can dependably follow nozzle specifications in selecting TeeJet Spray Nozzles to meet the requirements of all equipment and chemicals.

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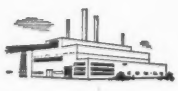

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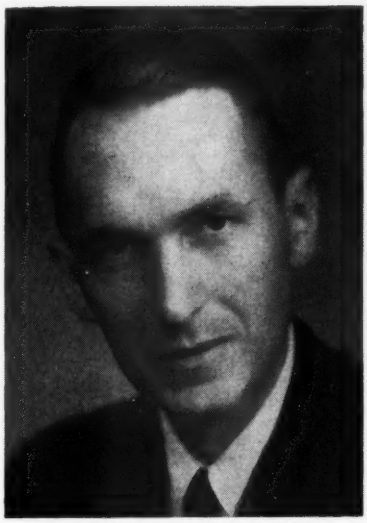
Industrial News

Rucker Succeeds Chace at NFA



Delbert L. Rucker

John F. Gale

Delbert L. Rucker has been named director of information for The National Fertilizer Association. He replaces William E. Chace, who resigned from NFA to become Washington representative of Group Attitudes Corp.

John F. Gale is new editor of *National Fertilizer Review*. He also will edit and assist in the preparation of NFA's educational projects. He has been a staff member of the association since 1950.

Rucker, who will edit *Fertilizer News* and handle press and radio contacts, formerly was associated with the USDA for nearly 12 years in information, public relations and administrative activities.

Five Mente Executives File Claims on Estate

Five former executives of Mente & Co. have filed claims in probate court at Memphis, Tenn. totaling $2,239,368 against the estate of Isaac T. Rhea.

The claims state that Rhea, who had been president of the company, orally contracted to will the claimants his interest in Mente & Co., in consideration for the commensurately low salaries paid them.

Rhea failed to fulfill this alleged agreement, the claims charge. His entire estate was left to his wife, who died shortly before his death.

Claimants and claims were listed as follows:

Harold Danziger, $783,799; E. J. Appolonio, $559,842; O. F. Littlefield, $347,102; J. M. Wood, $347,102 and Marshall L. Harper, $201,523.

Haude To Grace

William J. Haude has been named vice president in charge of marketing for Grace Chemical Co.

Until recently, he had been president of Pittsburgh Agricultural Chemical Co., a position which he held from 1948 to 1953.

Haude received degrees in entomology and agronomy from the University of Illinois and an M. S. degree from Tulane University.

Spencer Income Up

New highs were reached in both net sales and net income by Spencer Chemical Co. in its fiscal year ended June 30.

Net sales amounted to $30,837,455 compared with $28,771,733 in the previous year. Net income after taxes amounted to $4,661,177, an increase of approximately 10 per cent over the $4,223,433 earned last year.

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FOR AGRICULTURAL
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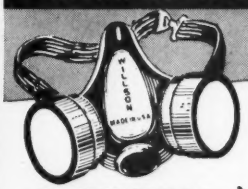

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Comfortable, efficient protection for light concentrations of insecticides.

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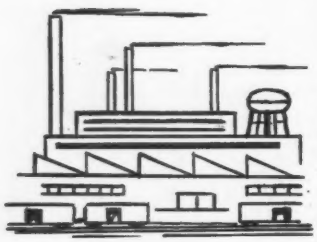

Minerals are just as essential to healthy plant growth and optimum production of vitamin-rich crops as are nitrogen, potash and phosphate. Mineralized fertilizer stimulates sales and creates new business because the results are conclusive. Fertilizers that give superior results are the fertilizers that the growers buy.

As basic producers of minerals, we would like to discuss mineralized fertilizer with you and show you how to increase your fertilizer tonnage and profits by the addition of minerals.

We can supply mineral mixtures to your own specifications in large or small quantities.

☆ COPPER SULPHATE ☆ ZINC SULPHATE ☆ MANGANESE SULPHATE ☆ MAGNESIUM SULPHATE ☆

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SOLUBLE TRACE MINERALS

Tennessee's trace minerals are soluble and their nutritional value is immediately available to the plant. Soluble trace minerals are more economical and faster acting.

TENNESSEE TRI-BASIC COPPER SULPHATE

TRI-BASIC Copper Sulphate is a chemically stable copper fungicide containing not less than 53% metallic copper. TRI-BASIC Copper Sulphate can be used as a spray or dust on practically all truck crops and citrus crops. Control persistent fungus diseases—correct copper deficiencies from a nutritional standpoint. Use TC TRI-BASIC Copper Sulphate.

☆

COP-O-ZINK NEUTRAL COPPER ZINC

COP-O-ZINK is a new, neutral copper-zinc fungicide containing 42% copper and 11% zinc. COP-O-ZINK gives a superior performance in control of fungus diseases. COP-O-ZINK composition of two essential elements gives it added value in correcting deficiencies of zinc and copper and in stimulating plant growth. COP-O-ZINK is compatible with all inorganic and organic insecticides. No lime is required. For use in spraying or dusting.

NU-Z NUTRITIONAL ZINC

NU-Z contains 52% metallic zinc. It is a neutral zinc compound which does not require the addition of lime for direct foliage application. NU-Z gives excellent coverage and adherence to plant foliage, thus rendering it available over a longer period of time. Safe for direct application. For zinc deficiency and plant nutrition—use as spray or dust.

☆ BORON ☆ FERRIC IRON SULPHATE ☆

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TENNESSEE CORPORATION

Industrial News

N. J. Fertilizer Men At Rutgers Conference

New Jersey fertilizer manufacturers last month attended a conference at Rutgers University, New Brunswick.

Speakers at the meeting included Dr. Firman E. Bear, W. R. Allstetter, Roy L. Flannery and Ernest G. Christ.

Dr. Bear, chairman of the Rutgers Soils department, outlined latest developments in trace element research.

"What the Fertilizer Industry Desires in Institutional Research" was explained by W. R. Allstetter, vice president of the National Fertilizer Association.

Operation of the Gloucester County soils laboratory, supported by farmers and the experiment station, was described by Flannery, who presented the project as a new concept in soil testing.

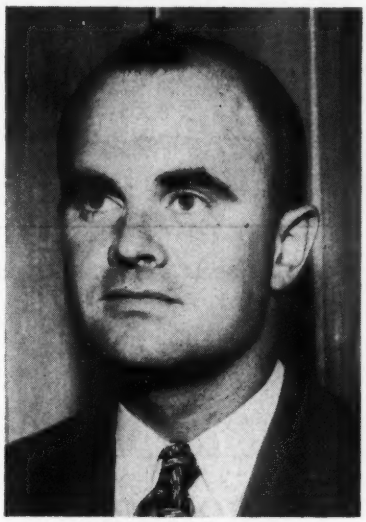
Extension Fruit Specialist E. G. Christ told how to make the best use of fertilizer on fruit crops.

Ten-minute reviews of current fertilizer work at the college were given by Dr. E. R. Purvis, H. F. Perkins, Dr. Robert S. Snell, C. H. Ramage and Dr. O. Wesley Davidson.

Fulton Bag To Build Plant in New Orleans

Construction soon will be begun by Fulton Bag & Cotton Mills on a one-million dollar plant at New Orleans, according to Jason M. Elsas, vice president in charge of Fulton's New Orleans' operations.

Named Director



Thomas M. Ware

Thomas M. Ware, vice president in charge of the Engineering division, International Minerals & Chemical Corp., has been elected a director of Dunlap and Associates, an industrial consulting firm.

Ware, a Cornell University graduate, has been a design engineer for Lockheed Aircraft Corp., chief engineer of the Radioplane Co., project engineer of the Special Devices division, Office of Naval Research and staff engineer for George Fry & Associates.

He has been with International Min. & Chem. since 1952.

New Cal-Spray Box

California Spray-Chemical Corp.'s new post office box number in Orlando, Fla., is 7067.

'Chemicalized Farming' Predicted at Convention

Chemical manufacturers from 54 nations last month gathered at the American Chemical Paint Co. for a special convention in Ambler, Pa.

The delegates, representatives of free-world manufacturers who operate under special contracts with ACP, heard Dr. Gilbert Alghren of Rutgers University's Department of Farm Crops say that the world is coming into a chemicalized agriculture in which chemical power is being increasingly substituted for mechanical power.

Other speakers at the convention were Dr. R. B. Alderfer, professor of soil technology at Pennsylvania State College; Dr. John Baylor, Rutgers; Dr. T. K. Pavylchenko, Canadian director of research, American Chemical Paint Co. and R. H. Beatty, director of agricultural research for ACP.

Grace Buys Building

Purchase of the 24-story New York Cotton Exchange Building, for partial occupancy, was made by W. R. Grace & Co. last month.

The building occupies the block-front on William Street from Beaver Street to Hanover Square with a plot area of 12,000 square feet.

Grace, when possession is obtained, will move subsidiary companies now located in five other buildings in the downtown area to the new premises.

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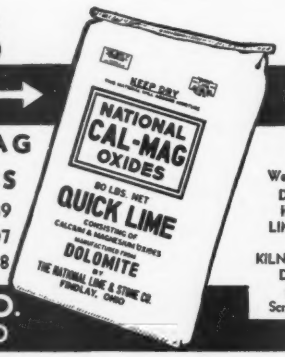

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DOLOMITIC HYDRATED LIME (165 TNP)
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- Blood and Fertilizer Tankage
- Phosphate Rock
- Castor Pomace
- Potash
- Calcium Ammonium Nitrate
- Ground Rice Hulls
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Batch Mixers — Dry Batching
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Tailings Pulverizers - Swing Hammer and Cage Type
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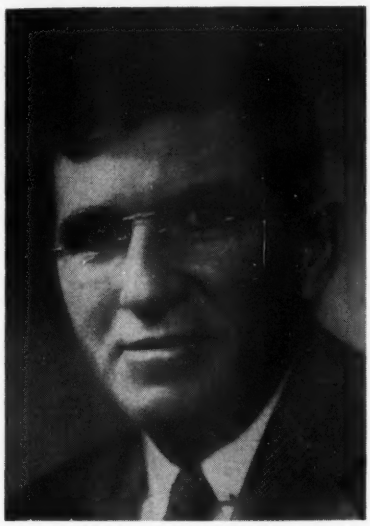
Industrial News

General Manager



Kenneth D. Morrison

Kenneth D. Morrison recently joined Philipp Brothers Chemicals, Inc. as general manager of its newly organized Agricultural division.

Morrison, early in his career, was New York manager of International Minerals & Chemical Corp.'s Potash division. He has served as president and director of Naco Fertilizer Co., vice president of Davison Chemical Corp. and recently was vice president and director of Summers Fertilizer Co.

USDA Reports Tests With 237 Insecticides

A report on 237 organic compounds tested as insecticides has been prepared by USDA. The compounds were received from the Chemical Biological Coordination Center of the National Research Council.

Included in the report are results obtained from tests made at the Anaheim Cal. laboratory of the Bureau of Entomology and Plant Quarantine November, 1949 to December, 1952.

The compounds all were given initial tests as 10 per cent dusts or five per cent acetone sprays against at least three species of insects. Spider mites were sprayed at either one or five per cent concentrations.

C. F. A. Makes Plans For November Confab

When the California Fertilizer Association meets on November 9 and 10 in Carmel, Cal., its members can expect to hear many interesting talks at the business sessions and still have time left to participate in the many forms of relaxation planned for them.

Speakers at the sessions, to be held in the new Golden Bough Community Playhouse, will include Dr. William A. Albrecht, chairman, Department of Soils, University of Missouri; Dr. Russell Coleman, president of the National Fertilizer Association; Jesse W. Tapp, vice president, Bank of America; Allen B. Lemmon, chief, California Bureau of Chemistry and M. E. McCollam, American Potash Institute, who is chairman of the association's soil improvement committee.

Three new directors will be elected for three-year terms and budgets will be considered both for CFA's Soil Improvement Committee's research and educational program and for association administration.

After their business has been conducted, delegates will be invited to participate in golf and bowling tournaments. Bridge and golf tournaments are planned for the women.

Prizes will be awarded to winners of the events at the annual banquet on Nov. 10 at the Monterey Peninsula Country Club.

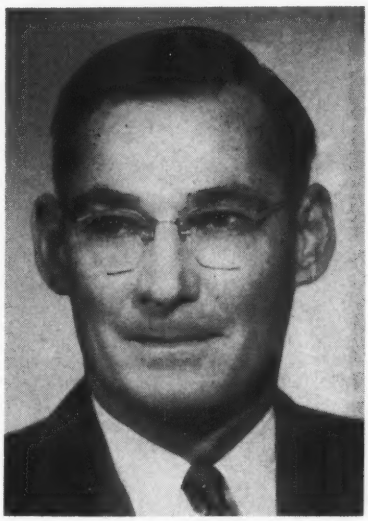
Balfour, Guthrie and Co., Ltd. will be host at a reception in the country club prior to the banquet.

Two other companies also have invited delegates to be their guests at events during the convention.

The American Potash and Chemical Corp. will be host at a cocktail party to be held at the Monterey County Fair Grounds on Nov. 9, followed by a charcoal broiled steak dinner under the auspices of Shell Chemical Corp.

Women will be treated to a cocktail party, luncheon and fashion show at the LaPlaya Hotel by CFA on Monday, Nov. 9.

Now at Thurston



W. C. Smith

W. C. "Chan" Smith has joined the staff of Thurston Chemical Co.

Smith had been employed for 18 years by Armour Fertilizer Works, working alternately in the advertising, purchasing and sales departments until 1942 when he enlisted in the Air Force.

Upon discharge, he returned to Armour to work in its Houston sales office, and in 1946 was transferred to Dallas as district sales manager, the position he held until he resigned to join Thurston.

Utah Sites Considered For New Ammonia Plant

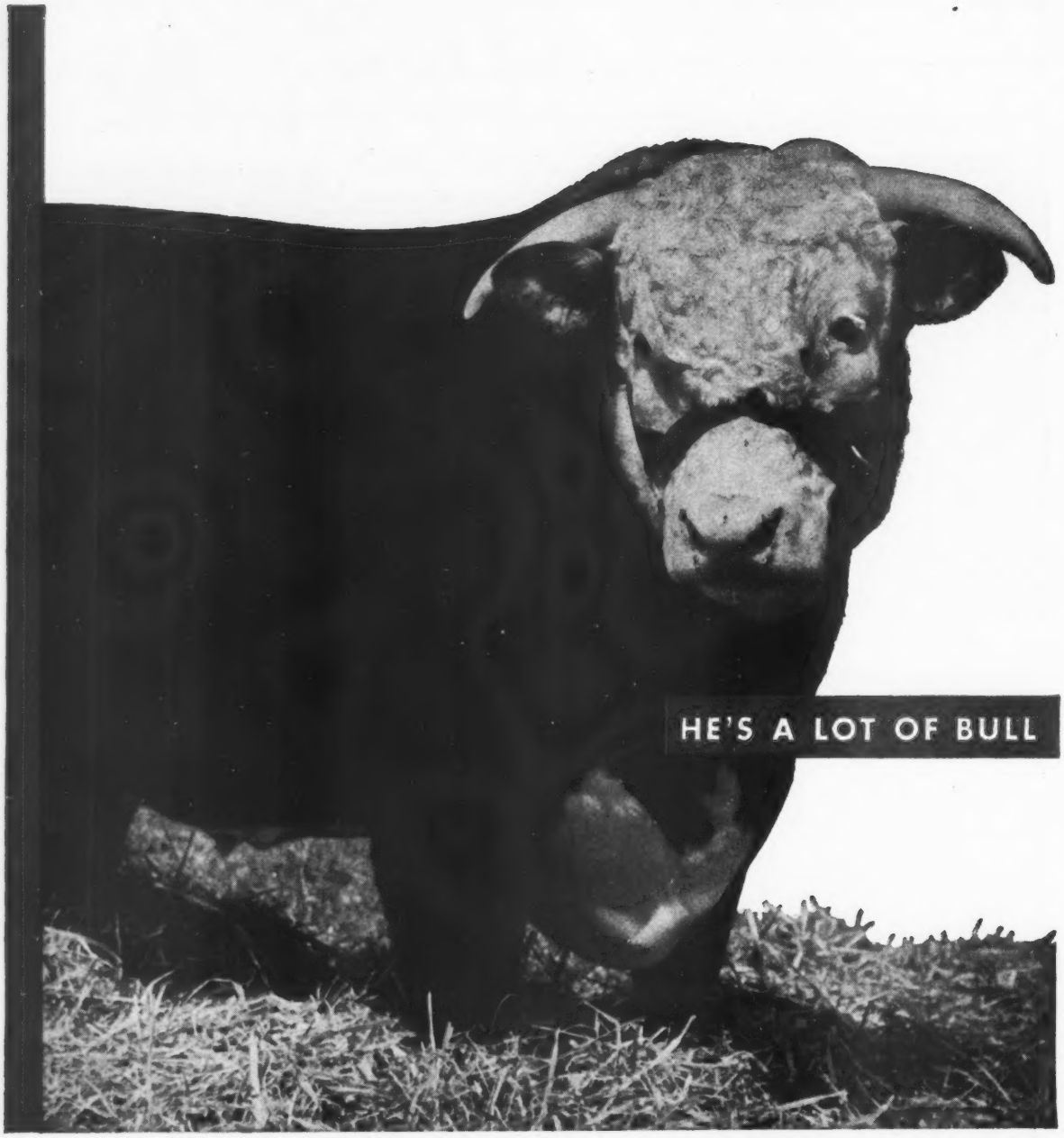
Utah may be the site of an $18½ million ammonia plant to be built by Houdry Corp.

Locations in Juab and Sanpete counties have been studied by Dr. A. G. Oblad, associate director of research for Houdry and Charles R. Germer, director of purchases, Catalytic Construction Co.

Both firms are associated with Utah Chemical Co. of Salt Lake City, which has stated that it plans to erect a plant to make ammonia from natural gas in central Utah.

Emulsol Moves Bell

Emulsol Corp., of Chicago, has transferred Jack Bell from its research laboratory staff to the technical sales staff.



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A PRODUCT OF NEW MEXICO U.S.A.

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GRANULAR MURIATE OF POTASH 60% K_2O MIN.
MANURE SALTS 20% K_2O MIN.

He's all beef and more than a yard wide, a healthy, hefty example of prime livestock. The best fodder on the market went into every pound he carries. Prime meat always comes from peak production in the field and rich feed in the silo.

All growth, animal or vegetable, ultimately comes from the soil. Daily the demands of growing crops and thriving livestock drain the land of vital plant-food elements. Fertilizers help restore these elements.

Many of the most effective soil-replenishing fertilizers contain POTASH, often Sunshine State Potash from New Mexico. Potash nourishes the soil and strengthens crop resistance to disease and drought. POTASH is one of the most valuable profit-producing aids farmers and business men can use.

UNITED STATES POTASH COMPANY, Incorporated, 30 Rockefeller Plaza, New York 20, N. Y.

Industrial News

American Cyanamid Opens New Stamford, Conn. Lab

American Cyanamid Co. last month opened its new laboratory in Stamford, Conn.

Research will be carried out with fertilizers, insecticides, fumigants, fungicides, herbicides and other related chemicals at the two-story modern lab.

Total area of the building is more than 21,000 square feet, with the first floor devoted primarily to research on insecticides.

In one room, three chambers are to be installed for controlled environmental conditions of temperature, humidity and light. These will enable researchers to test chemicals which previously would have been sent out for field testing in different parts of the country, in the laboratory.

Six laboratories on the second floor will be used for chemical and biological research on fertilizers, herbicides and fungicides.

Dr. Frank Stark directs agricultural chemical research at the Stamford laboratories.

International Research Called Goodwill Builder

International research contributes not only to the world food supply, but also builds a reservoir of good will, according to Dr. Karl S. Quisenberry, assistant chief of the Bureau of Plant Industry, Soils and Agricultural Engineering, USDA.

Dr. Quisenberry, in a speech to the U. S. Commission for UNESCO last month, cited examples of international cooperation in agricultural research as far back as 1901, when other nations provided plant breeders of this country with material for improving their crops. Now, he said, the flow of information moves both ways.

Research workers from the United States helped to organize regional programs on the production of hybrid corn and the improvement of grasslands in Europe and the Near East.

Insect Pouches

How insects are dependent on their tiny, pouch-like organs and their significance in insect control will be studied at the University of California, with a federal government grant of $6,000, according to Edward A. Steinhaus, director of the university's pathology laboratory.

Apparently vitamins and hormones are produced and nitrogen is "fixed" by the micro-organisms named symbiotes, which are contained in the organs, called mycetomes.

According to Steinhaus, "if we can learn how to disrupt the beneficial actions of these symbiotes, we may be able to achieve new measures of insect control."

10-1 Vibrating Closed Conveyor

New product of Gifford-Wood Co. is a special vibrating conveyor known as the "Oscilveyor."

It can handle materials which must be transported within a closed housing and which are not readily handled by belt, screw or other types of conveyors, according to the company.

Oscillating with a continuing series of forward-and-up, downward-and-back movements, it moves material by throwing it forward short distances in making its cycle.

For additional information on the Oscilveyor, fill in a **Reader Service** card, using **Code Number 10-1.**

Diamond Alkali Co. Forms New Divisions

Two new autonomous divisions have been formed by Diamond Alkali Co. with two executives acting as their general managers.

The Plastics and Agricultural Chemicals division will be headed by A. L. Geisinger, a vice president, and the Chromium Chemicals division by Frank Jarvis. Jarvis since 1951 has been president of Diamond Magnesium Co., a subsidiary of Diamond Alkali.

Announcement also was made by the company of election of W. H. McConnell and C. E. Lyon to vice presidencies.

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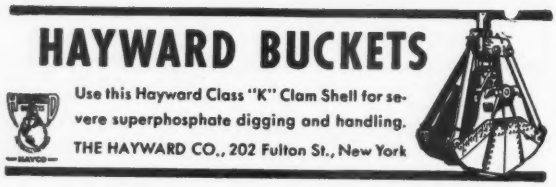

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ATLANTA UTILITY WORKS EAST POINT, GA.

Industrial News

Industry, Government Talk About Phosphates, Uranium

PROSPECTS for the development of an important domestic source of by-product uranium were discussed by officials of the National Production Authority, Department of Commerce and the Atomic Energy Commission at a meeting Sept. 29 with the Phosphatic Fertilizers Industry Advisory committee.

Expansion of facilities already has taken place in the fertilizer industry, but government officials nevertheless suggested to the committee that, as and when additional facilities are contemplated by the industry, the companies concerned consult AEC with respect to process studies sponsored by the Commission.

Using Leached Zone

These studies deal with utilization of the "leached zone" layer which overlies the commercial phosphate rock of Florida for recovery of phosphatic fertilizer, with uranium as a by-product. The commercial phosphate rock has been used as a source of by-product uranium since September 1952 in one privately operated production plant. Others are now under construction.

Industry representatives were advised of progress made in obtaining uranium concentrate from the leached zone phosphatic material in two very small pilot plants which are developing several processes. Hope was expressed that at least one commercial plant, utilizing one of the process approaches, would be built and operated during 1956.

Leached zone materials presently are being discarded in the mining of Florida phosphatic rock from a lower level of the phosphatic strata known as the "matrix." NPA officials said that utilization of the material obtainable from the leached zone overlay not only would provide a domestic source of uranium but would in effect conserve domestic deposits of phosphatic and other minerals.

Because iron and aluminum phosphates are found in the leached zone rock, attainment of the Commission's objective is directly dependent on the ability of the phosphatic fertilizer industry to apply processes under study to the economic production and marketing of the resultant phosphatic fertilizers.

Industry representatives at the meeting were advised that, within six months, capital and operating cost estimates and further information on the agronomic value of plant food products produced from the leached zone materials will be available.

Committee members indicated that the government's suggestion is too new for them to express immediate opinion as to its feasibility. They suggested that another meeting be held on the subject at a later date, after they have discussed the matter with their companies.

Present Status

According to the present status of the NPA phosphatic fertilizer expansion program it includes construction of 56 new facilities by Jan. 1, 1955, having a production estimated at 1,203,400 short tons per year. The product breakdown is as follows: Triple superphosphate projects, 13; ammonium phosphates, 7; nitraphosphates, 11; normal superphosphate, 20; phosphoric acid and miscellaneous, 8.

NPA officials said this meeting represented an important example of the manner in which Commerce Department advisory committees may be consulted by a government agency to promote a commercial development that will tie in closely with a vital defense activity.

W. R. Koster, of the NPA Chemical and Rubber Division, presided at the meeting.

Chase Appoints Muller

W. J. Muller has been appointed manager of Chase Bag Co.'s Orlando sales office.

Promoted

Leland D. Smith

Leland D. Smith has been named director of transportation of Consolidated Chemical Industries, Inc.

Smith has been associated with the company since 1934 and was formerly southern division traffic manager.

He is an active member of the American Society of Traffic and Transportation, and the National Industrial Traffic League.

In 1950 he received an LL. D. from South Texas College of Law and has membership in the American Bar Association.

J. C. Harris To Head Monsanto Research Unit

An Application Research department has been formed by Monsanto Chemical Co. with J. C. Harris as its director.

Harris, who joined Monsanto in 1936 as a research chemist, was promoted to a group leader in 1944 and was made an assistant director of the Chemical Research department in 1951.

The new research group, which will be located at the Central Research department in Dayton, will be initially interested in formulation of products for the home garden and agricultural chemical fields, as well as products for household use.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, as amended by the acts of March 3, 1933 and July 2, 1946 (Title 39, United States Code, Section 233)

of FARM CHEMICALS, published monthly at Philadelphia, Pa., for October 1, 1953

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Name of	Post-office Address
Publisher, Sam Lewis Veitch	317 N. Broad St., Phila., Pa.
Editor, A. A. Ware	317 N. Broad St., Phila., Pa.
Managing Editor, H. C. Carson	317 N. Broad St., Phila., Pa.
Business Manager, A. A. Ware	317 N. Broad St., Phila., Pa.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.

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3. That the known bondholders, mortgagees and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above was (This information is required from daily, weekly, semi-weekly, and tri-weekly newspapers only.)

A. A. WARE, Editor.

Sworn to and subscribed before me this 2nd day of Sept., 1953

A. F. WALSH
Notary Public

(My commission expires March 5, 1957.)

Industrial News

Mathieson Ups Cottrell

Mathieson Chemical Corp. has promoted S. Cottrell to vice president of the Mathieson Agricultural Chemicals division.

Operation of the division's seven plants, located in Arkansas, Arizona, Texas, North Carolina and Pennsylvania, still will be directed by Cottrell.

He joined Mathieson in 1949 as operations manager of Mathieson Hydrocarbon Chemicals Corp. Previously he was associated with American Potash and Chemical Corp. and Monsanto Chemical Co. in executive capacities.

WHO Issues Booklet on Hazards of Pesticides

"Toxic Hazards of Certain Pesticides to Man" is the title of a publication issued by the World Health Organization, written by J. M. Barnes, the organization's medical consultant.

A brief account of the value of pesticides in disease control and in crop protection, the hazards of certain pesticides and their control during manufacture and application are given.

The document also discusses hazards of certain pesticides to third parties and makes recommendations and suggestions for further research. One section is devoted to a selected, classified bibliography.

The report's stated aim is to advise the director general of WHO, through a report, on existing information relative to chronic and acute toxic effects on man of some of the pesticides.

Stauffer Financing

Stauffer Chemical Co. last month filed a registration statement with the Securities and Exchange Commission relating to a proposed offering of $15 million 20-year debentures due Sept. 15, 1973 and 325,000 shares of common stock.

The proposed offering constitutes the first public financing in the company's history. It will be underwritten by a nation-wide group of investment firms headed by Morgan Stanley & Co., according to Stauffer.

Proceeds from sale of the debentures and 310,000 of the common shares will be added to the general company funds and in part used to retire bank loans of $14,400,000.

Capitalization following the sale will consist of $15 million debentures, $4,176,564 other long-term indebtedness and 2,350,240 shares of $10 par common stock, according to the company.

Bug Noises

Scientists at Kansas State College have developed techniques whereby they can listen to hidden insects chewing inside kernels of wheat and other grain.

Rapid evaluation of fumigant effectiveness will be made possible through this work, according to the researchers, where normally it might be several weeks before the insects would emerge. A suitable sound detection device for this purpose now is under construction.

Insects, in the larval and pupal stages, appear to have two distinct types of sound. One is a low frequency scraping noise, believed made by movement of larva and pupa within the kernels and the other a high frequency sound, believed caused by chewing. Investigators have been unable to detect internal insects in the egg and extremely early larval stage.

Additional studies now are in progress to refine techniques and better evaluate findings.

10-2 Simplified Fork Lift Truck

An all new Mobilift 4,000 pound capacity fork lift truck called the "D–424" now is being manufactured by Mobilift Corp.

Operation is simplified because there is no clutch pedal and no gears to shift. All forward and reverse movement is activated by one push-pull Lev-R-Matic control conveniently placed for right hand operation.

Another push-pull lever controls the two speed transmission which gives a high range of 11 mph and a low range of 5¾ mph forward and reverse.

Hoisting is by a displacement type hydraulic cylinder. Ball bearing rollers guide the telescoping channels. Standard mast height is 83 inches and lifting height 108 inches.

For further information on the D–424, fill out a **Reader Service** card, using **Code Number 10-2.**

Rutland Appointed

J. W. Rutland has been named vice president in charge of sales by Southern States Phosphate & Fertilizer Co., of Savannah, Ga.

For forty years, Rutland has been associated with the fertilizer industry, being most recently employed as general manager of International Minerals & Chemical Corp.'s Plant Food division in Chicago.

He is president of Western Carolina Phosphate Co. and vice-president for Smoky Mountains Fertilizer Co.

Kropa Joins Battelle

New chief chemical consultant of Batelle Memorial Institute is Dr. Edward L. Kropa. He went to the research center from The Borden Co., where he was vice president and chemical director of the company's chemical division.

In his new position, Dr. Kropa will serve as an adviser to Battelle's varied chemical research groups.

Industrial News

10-3 Malathon For Dairy Barns

Malathon has been accepted for fly control inside dairy barns by the U. S. Department of Agriculture, according to American Cyanamid Co., manufacturers of technical malathon.

The company says that one application of the material will last from 10 to 21 days, depending on original infestation, general sanitation and weather. Repeat applications may be necessary for continuing control.

Called by the USDA "one of the safest insecticides to handle," malathon also has proved easy to apply and highly effective even on DDT-resistant strains, the company states.

For a complete list of uses for malathon dust and spray formulations, fill out a **Reader Service** card, using **Code Number 10-3.**

Chemical Sales Clinic

Industry sales problems and techniques will be discussed at the Second Chemical Sales Clinic, Oct. 19–20 at the Hotel Commodore, New York.

Sponsored by the Salesmen's Association of the American Chemical Industry, the clinic will feature many prepared talks and floor discussions on the relationships between management, the sales department and the individual salesman; imagination in selling; the distributor's role in chemical sales and other topics of interest to sales personnel.

Joins Arkell

John O. Frahm

John O. Frahm has been named to the sales staff of Arkell & Smiths. He will represent the company in Oklahoma and northern Texas.

In two other personnel moves, Frank Smith, former sales representative of the central division at Columbus, O. becomes southern division sales manager, while Roger Seymour, former office manager at the Wellsburg, W. Va., plant, replaces Smith at Columbus.

NFA Film Strips

The National Fertilizer Association is distributing a film strip of its highly successful film "Cash In On Corn" to industry members, county agents and vo-ag teachers.

It is available from NFA's office, 616 Investment Building, Washington, D. C.

53-54 Fertilizer Estimate Released

An estimate of the supply of fertilizers available in 1952–53 and the amount that can be made available in 1953–54 if a market for the plant foods exists is given in a report received at press time.

Following is complete text of the report:

The available supply of major plant nutrients reached a new high during the year ended June 30, 1953. In the main this increased supply was absorbed through consumption channels. The carryover of certain types of material was somewhat higher than a year earlier but is not of burdensome proportions.

The prices of fertilizer during the 1952–53 fiscal year averaged about two per cent higher than prevailed in 1951–52. Little changes from present price levels are expected during the coming year.

Preliminary estimates based on current information as to completion of new facilities, and assuming import-export relationships at about current levels, indicate the aggregate supply of the three major plant nutrients available for the 1953–54 season probably will exceed the record output of 1952–53 by approximately 13 per cent.

Nitrogen Supply

Nitrogen (N): The supply of nitrogen (N) available for fertilizer purposes in 1953–54 currently is estimated to slightly exceed two million tons. This is a preliminary

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estimate based on current information as to when a number of new synthetic ammonia plants are scheduled to be completed, and assumes about the same import-export balance as in 1952–53. This represents an increase of approximately 11 per cent above the reported 1952–53 supply of 1,800 thousand tons.

It is estimated that the supply of solid nitrogen materials (dry nitrogen) available for 1953–54 represents approximately 60 per cent of the total supply and that solutions and liquid materials (wet nitrogen) 40 per cent. For the previous year these percentages, based on trade deliveries, were approximately 62 and 38.

Phosphate (P_2O_5): Preliminary estimates indicate that the 1953–54 available supply of phosphatic material, P_2O_5 basis, may exceed the 2,410,000 tons available in 1952–53 by as much as 12 per cent. This estimate is based on current information with regard to the completion dates of new plants and assuming that sulfuric acid will continue in free supply.

The new plant capacity scheduled for completion in 1953 involves a sizeable tonnage of concentrated superphosphate, which should increase the supply of this material in relation to the total quantity of P_2O_5 available in 1953–54.

Potash (K_2O): The goal established for the expansion of potash (K_2O) production facilities is ahead of schedule.

The 1953–54 supply of potash available for fertilizer purposes will reflect production from these new facilities as well as increases from older operating units. Taking into consideration the possible increase in domestic production, and assuming approximately the same import-export balance as in 1952–53, it is estimated that the 1953–54 supply will exceed the 1,735 thousand tons available in 1952–53 by as much as 15 per cent.

Preliminary 1953-54 Fertilizer Outlook

	Estimated 1952–53 Supply	Possible 1953–54 Supply	Possible Increase
N	1,800,000	2,000,000	11
P_2O_5	2,410,000	2,700,000	12
K_2O	1,735,000	1,995,000	15

American Potash Progress

Because of its comprehensive policy of research, development and expansion, American Potash & Chemical Corp. is "on the threshhold of an important phase in our history," stated Peter Colefax, company president, in an address before the New York Society of Security Analysts, Inc., last month.

"We are placing increased emphasis on upgraded chemicals, particularly those which are processed from the basic materials we produce at our Trona Operation," Colefax said. "Our entrance into the field of fine chemicals was an innovation for the company, and one which we intend to pursue vigorously in the future and on a national basis."

. . . NAC 20th Anniversary Convention

(*Continued from page 15*)

containing such mixes.

Allaying Public Fears

In the FDA report to the pesticide industry, Larrick asserted that his organization is interested in allaying public fears about chemicals in foods.

In referring to the Miller-Aiken bill, which the NAC and other associations are backing in Congress, Larrick said "some areas of disagreement still remain but we are all hoping that many of the controversial features of the bill have been overcome.

"We believe," he stated, "your industry and the Food and Drug Administration see eye to eye on the basic premise, that to the extent possible, all differences of viewpoint concerning scientific questions should be settled by amicable discussion among scientists."

W. Raoul Allstetter, vice president of the National Fertilizer Association, speaking on merchandising farm chemicals, centered his comments on one of the NFA promotional programs aimed at persuading farmers to buy more fertilizer.

He showed portions of the NFA film "Cash In On Corn," to illustrate one means of disseminating information to farmers and farm leaders on the value of fertilizers and pesticides.

Other speaker on the diversified program was Joseph H. Battley, president of the National Paint, Varnish and Lacquer Association, whose topic was "Trade Associations."

Urges Aid to Government

Battley, who said he was "once a bureaucrat myself" when he served on the National Recovery Administration in the 1930's, urged industry members to cooperate with government leaders.

"We need business leaders available to help the government and we should strive for self regulation of industry with government as the watchdog," Battley advised.

Convention sessions were alternated between the Essex and Sussex and Monmouth Hotels, with the annual banquet held in the latter. Bathing, golf, tennis and dancing provided varied recreation during the afternoons and evenings.

New members elected to the board of directors of the organization for terms of five years were John H. Kennedy, in charge of agricultural chemical sales for Stauffer Chemical Co.; D. F. Murphy, vice president, Rohm & Haas Co. and G. C. Romig, president of American Chemical Paint Co. ◆

. . . Anhydrous

(*Continued from page 17*)

soils, acid crops and poorly-drained or low-lying areas. In such cases cotton benefited the following year.

Support from Klemme

Dr. Arnold W. Klemme, agronomist at the University of Missouri, made the following statement about conditions in Missouri, Illinois and Ohio:

". . .Fall application of anhydrous ammonia is practical for most crops in this area, because when the soil temperature drops to 75 degrees at three inches depth, the ammonia will not nitrify and leach out."

Dr. A. J. Ohlrogge, professor of soil fertility at Purdue University, made a similar statement in reference to the heavier textured soils in Indiana.

Corn, wheat, small grain and pasture grasses were cited as crops that best profit from off-season applications of anhydrous ammonia in the Great Plains and Great Lakes Regions.

In Texas wheatlands conditions also are suitable for fall application of NH_3, according to Dr. Tom C. Longnecker, of Texas Research Foundation.

The Institute reports that General Ralph H. Wooten, one of the principal distributors in the South, recommends fall applications as a way to obtain 12-month pastures in western Tennessee and northern Mississippi by applying the solution on bermuda and lespedeza pasture and seeding them with winter rye grass.

Fine in Georgia

Other support for ammonia comes from Jeff Davis in Albany, Ga., who reports fall application very beneficial for fescue and coastal bermuda pastures as well as for fall-planted rye and oats for winter grazing.

Many industries are studying the anhydrous field, but, according to AAI, many farmers are far ahead of technical research as far as acceptance and experience are concerned.

AAI believes this has resulted from the rapid growth and expansion of NH_3 as a commercial form of nitrogen for direct application since 1947. ◆

. . . Arizona

(*Continued from page 35*)

to maintain a standardized quality.

Dick Leigh is manager of the new plant. Paul Sexton is superintendent of processing, and Mrs. Lee Andrus is office superintendent. Art Lofgreen is field manager for Arizona Fertilizers in Pinal county. President of Arizona Fertilizers, Inc. is Frank Feffer, Sr.

All of the larger equipment was custom made to fit the specifications set up by Wharton.

Poulson Equipment

The mixers, grinders, kettles and tanks were manufactured by A. E. Poulson Co., Los Angeles. All of the equipment is steam heated and controlled.

Included are two grinders and two mixers capable of impregnating and grinding dust to a fineness of 18/1000 of an inch, one weigh tank and two melt kettles.

Temperatures on the production line range from 20 degrees below zero to 350 degrees above zero.

Handling Liquids

Liquids are handled outside in five specially lined tanks connected with the main plant by underground lines. The pumps were manufactured by Pacific Pump Co., Oakland, Cal. The dust blender was manufactured by Arizona Fertilizers' own engineering department.

Arizona Fertilizers takes credit for building the first insecticide dust blending plant in Arizona in 1939.

The company was organized 23 years ago by J. A. Feffer, Frank's father, in Phoenix, Ariz. He built the business up from scratch and persuaded his son to join him in making fertilizers for farmers in Arizona and nearby states.

The father-son combination added modern equipment to the plant and rapidly expanded it in the years that followed. ◆

Named Distributor

Berkshire Chemicals, Inc. has been appointed eastern distributors for agricultural products of Universal Detergents, Inc.

Antibiotics Can Control Certain Plant Diseases

Scientists who attended the American Institute of Biological Sciences meeting at the University of Wisconsin last month were given reasons why antibiotic drugs are capable of swift and effective control over certain bacterial diseases of plants.

They were told that streptomycin has the ability to penetrate plant tissue and then spread in an upward-outward course through the plant's circulatory system.

The course taken by streptomycin after it is applied to the lower stems of bean plants was traced by a team of USDA research scientists, headed by Dr. John W. Mitchell, principal plant physiologist. Traces of the antibiotic were found in the upper leaves within a few hours after application.

Control of "halo blight" was demonstrated in further experiments, carried out at the department's Beltsville, Md. station, with streptomycin.

In another experiment it was found that streptomycin doesn't travel downward.

New Growing Medium Marketed by Gro-lite

A new growing medium which, according to the company, absorbs water up to sixteen times its size has been placed on the market by the Gro-lite Co.

Called Gro-lite, it is a conditioner that aerates, insulates and moisturates seedlings, cuttings and plants.

It is manufactured from perlite ore which is heated to approximately 2,000° F. Popped particles, in crystalline form are combined with nitrogen and packaged.

Entomology Anniversary To Be Observed in '54

The 100th anniversary of the science of economic entomology will be observed in 1954.

Preparations for the century celebration already are under way, with the USDA's Bureau of Entomology and Plant Quarantine taking a leading part.

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

ALDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Agricultural Chemical Co., N. Y. C.

AMMONIA—Anhydrous and Liquor
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Lion Oil Co., El Dorado, Ark.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM NITRATE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Lion Oil Co., El Dorado, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM PHOSPHATE
Monsanto Chem. Co., St. Louis, Mo.

AMMONIUM SULFATE
See Sulfate of Ammonia

AMMONIUM SULFATE NITRATE
Baker & Bro., H. J., New York City

BAGS—Burlap
Bemis Bros. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.

BAGS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.

BAGS—Multiwall-Paper
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
International Paper Co., Bagpak Div., N. Y. C.
Hammond Bag & Paper Co., Wellsburg, W. Va.
Hudson Pulp & Paper Corp., N. Y. C.
Kraft Bag Corporation, New York City
McIver & Son, Alex. M., Charleston, S. C.
Raymond Bag Co., Middletown, Ohio
Union Bag & Paper Corp., New York City

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES
Fischbein Co., Dave, Minneapolis, Minn.
International Paper Co., Bagpak Div., N. Y. C.

BAG CLOSING—THREAD & TWINE
Bemis Bros. Bag Co., St. Louis, Mo.

BAG PRINTING MACHINES
Schmutz Mfg., Louisville, Ky.

BAG FILLING MACHINES
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

BHC AND LINDANE
Ashcraft-Wilkinson Co., Atlanta, Ga..
Diamond Alkali Co., Newark, N. J.
Ethyl Corporation, New York City
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Pittsburgh Agricultural Chemical Co., N. Y. C.

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Baker & Bro., H. J., New York City
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McIver & Son, Alex M., Charleston, S. C.
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Hayward Company, The, New York City

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CARS AND CART
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National Aniline Div., Allied Chemical & Dye Corp., New York City
National Lime & Stone Co., Findlay, Ohio

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CONVEYORS—Belt
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Tennessee Corp., Atlanta, Ga.

COTTONSEED PRODUCTS
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Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

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Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Agricultural Chemical Co., N. Y. C.

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Pittsburgh Agricultural Chemical Co., N. Y. C.
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DRYERS
Sackett & Sons Co., The A. J., Baltimore, Md.

ELEVATORS—Bucket
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

EMULSIFIERS
Atlas Powder Co., Wilmington, Del.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City
Fairlie, Inc., Andrew M., New York City
General Industrial Development Corp., N. Y. C.
Marietta Concrete Corporation, Marietta, Ohio
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.
Titlestad Corporation, Nicolay, New York City

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McIver & Son, Alex. M., Charleston, S. C.

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Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

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Ashcraft-Wilkinson Co., Atlanta, Ga.

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Berkshire Chemicals, New York City
Tennessee Corp., Atlanta, Ga.
Woudhuysen & Associates, H. L., New York City

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Willson Products, Inc., Reading, Pa.

GOGGLES
Willson Products, Inc., Reading, Pa.

HANDBOOK
Hanna, Lester W., Forest Grove, Ore.

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Pittsburgh Agricultural Chemical Co., N. Y. C.

HERBICIDES—Oils
Lion Oil Company, El Dorado, Ark.

HOPPERS & SPOUTS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind..

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Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Berkshire Chemicals, New York City
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Woodward & Dickerson, Inc., Philadelphia, Pa.

INSECTICIDES
American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Berkshire Chemicals, New York City
Diamond Alkali Co., Newark, N. J.
Ethyl Corporation, New York City
Faesy & Besthoff, Inc., New York City
Pittsburgh Agricultural Chemical Co., N. Y. C.
U. S. Industrial Chemicals Co., New York City

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American Agricultural Chemical Co., N. Y. C.

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American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.
National Lime & Stone Co., Findlay, Ohio
Pittsburgh Agricultural Chemical Co., N. Y. C.

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

LOADERS—Car and Wagon
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making and Handling
Atlanta Utility Works, The, East Point, Ga.
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Sturtevant Mill Co., Boston, Mass.

MACHINERY—Acidulating
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Ammoniating
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Granulating, Fertilizer
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Grinding and Pulverizing
Atlanta Utility Works, The, East Point, Ga.
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

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Hough, The Frank G. Co., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Mixing, Screening and Bagging
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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Power Transmission
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY
Superphosphate Manufacturing
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MAGNESIUM SULFATE
Berkshire Chemicals, New York City

MANGANESE SULFATE
McIver & Son, Alex. M., Charleston, S. C.
Tennessee Corp., Atlanta, Ga.

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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

NITRATE OF POTASH
Berkshire Chemicals, New York City

NITRATE OF SODA
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NITROGEN SOLUTIONS
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Lion Oil Company, El Dorado, Ark.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

NITROGEN MATERIALS—Organic
American Agricultual Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

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Ashcraft-Wilkinson Co., Atlanta, Ga.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

PENTACHLOROPHENOL
Monsanto Chemical Co., St. Louis, Mo.

PHOSPHATE ROCK
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

PHOSPHORIC ACID
American Agricultural Chemical Co., N. Y. C.
Monsanto Chemical Co., St. Louis, Mo.

PLANT CONSTRUCTION—Fertilizer and Acid
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
General Industrial Development Corp., N. Y. C.
Monsanto Chemical Co., St. Louis, Mo.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Titlestad Corporation Nicolay, New York City

POTASH—Muriate
American Potash & Chemical Corp., N. Y. C.
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.
Baker & Bro., H. J., New York City
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Potash Co. of America, Washington, D. C.
United States Potash Co., N. Y. C.

POTASH—Sulfate
American Potash & Chemical Corp., N. Y. C.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Potash Co. of America, Washington, D. C.

POTASSIUM PHOSPHATE
Monsanto Chemical Co., St. Louis, Mo.

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Schmutz Mfg. Co., Louisville, Ky.

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Ashcraft-Wilkinson Co., Atlanta, Ga.

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Sackett & Sons Co., The A. J., Baltimore, Md.
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Willson Products, Inc., Reading, Pa.

SACKING UNITS
Sackett & Sons Co., The A. J., Baltimore, Md.

SCALES—Including Automatic Baggers
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

SCREENS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

SEPARATORS—Air
Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

STORAGE BUILDINGS
Butler Manufacturing Co., Kansas City, Mo.
Marietta Concrete Corporation, Marietta, Ohio

SULFATE OF AMMONIA
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Kolon Trading Co., New York City
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Jackle, Frank R., New York City
Lion Oil Co., El Dorado, Ark.
Mathieson Agricultural Chem'ls Co., Little Rock, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Phillips Chemical Co., Bartlesville, Okla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFATE OF POTASH—MAGNESIA
International Min. & Chem. Corp., Chicago, Ill.

SULFUR
Ashcraft-Wilkinson Co., Atlanta, Ga.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Texas Gulf Sulphur Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFUR—Dusting & Spraying
Ashcraft-Wilkinson Co., Atlanta, Ga.
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

SULFURIC ACID
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
International Min. & Chem. Corp., Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
Monsanto Chemical Co., St. Louis, Mo.
McIver & Son, Alex. M., Charleston, S. C.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

SUPERPHOSPHATE
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davison Chemical Corporation, Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC
Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TEPP
Monsanto Chemical Co., St. Louis, Mo.

TOXAPHENE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Agricultural Chemical Co., N. Y. C.

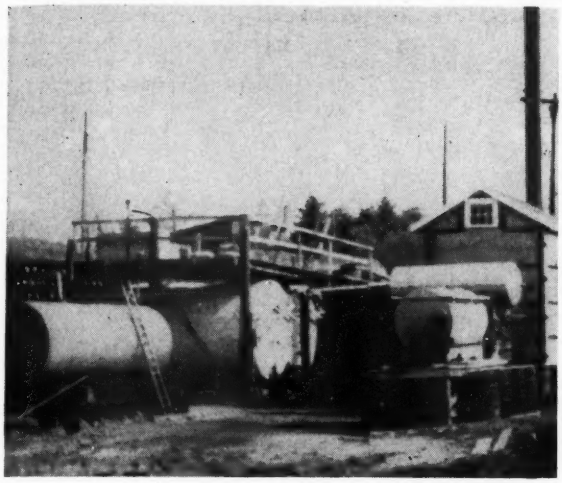
2, 4-D
Diamond Alkali Co., Newark, N. J.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

2, 4, 5-T
Diamond Alkali Co., Newark, N. J.
Ethyl Corporation, New York City
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

UREA & UREA PRODUCTS
Baker & Bro., H. J., New York City
Kolon Trading Co., New York City
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C

VALVES
Atlanta Utility Works, The, East Point, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.

ZINC SULFATE
Tennessee Corp., Atlanta, Ga.



Story of Massachusetts'

State-Made DDT

BACK in 1949, when pesticide manufacturers had fewer worries about tremendous inventories slowing up their operations and cutting profits, the state of Massachusetts went into the insecticide business on its own.

The state set up a temporary DDT mixing plant that year to help in its battle against the gypsy moth, according to H. L. Ramsey, chief superintendent of Insect Pest Control of the New England state, and later made it permanent.

Opened Fight on Gypsy Moth

"In 1949 in cooperation with one of the counties of this state," Ramsey told FARM CHEMICALS recently, "we undertook the job of spraying an area of some 250,000 acres in an effort to get rid of the gypsy moth."

The plan, the superintendent said, was to apply DDT in liquid form from airplanes at the rate of one gallon per acre.

"Because DDT was not too plentiful at that time, we found it difficult to secure the large quantities needed so we set up a temporary mixing plant to supplement the quantities that could be purchased," he added.

According to Ramsey, the temporary setup indicated that a tremendous saving could be made in the future because the state program called for a continuation of the county-wide method of spraying.

Plant Continued Permanently

"In the following year when we tackled an area of 450,000 acres," Ramsey said, "our belief was justified and we gradually began to transform the temporary setup into a permanent one."

The state obtained gravel fill at no cost, as well as thousands of railroad ties, which are used to bolster the cover for four 10,000 gallon storage tanks.

Ramsey said the venture is purely a departmental one; all the material made is used by the department, with none being sold to state, municipal or private agencies. ◆

Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City 6
American Potash & Chemical Corp., New York City 2
Armour Fertilizer Works, Atlanta, Ga. 54
Ashcraft-Wilkinson Co., Atlanta, Ga. 16, 54
Atlanta Utility Works, The, East Point, Ga. 66
Atlas Powder Co., Wilmington, Del. 36
Baker & Bro., H. J., New York City 40
Bemis Bro. Bag Co., St. Louis, Mo. 29
Berkshire Chemicals Inc., New York City 58
Bradley Pulverizer Co., Allentown, Pa. 66
Butler Manufacturing Co., Kansas City, Mo. 22
Chase Bag Co., Chicago, Ill. ..... —
Chemical Construction Corp., New York City 28
Davison Chemical Corporation, Baltimore, Md. ..... —
Diamond Alkali Co., Newark, N. J. 25
Duval Sulphur & Potash Co., Houston, Tex. 16
Fischbein Co., David, Minneapolis, Minn. ..... —
Gascoyne & Co., Inc., Baltimore, Md. 66
General Industrial Development Corp., New York City 24
Hammond Bag & Paper Co., Wellsburg, W. Va. ..... —
Hayward Company, The, New York City 66
Hough Co., The Frank G., Libertyville, Ill. 48
Hudson Pulp & Paper Corp., New York City 9, 10
International Paper Co., Bagpak Div., New York City 5
International Minerals & Chemical Corp., Chicago, Ill. ..... Back Cover
Jackle, Frank R., New York City 61
Keim, Samuel D., Philadelphia, Pa. 68
Kraft Bag Corporation, New York City ..... —
Lion Oil Company, El Dorado, Ark. 56
Marietta Concrete Corp., Marietta, Ohio ..... —
Mathieson Agricultural Chemicals Co., Little Rock, Ark. ..... —
McIver & Son, Alex M., Charleston, S. C. 62, 65, 70
Monarch Mfg. Works, Inc., Philadelphia, Pa. 66
Monsanto Chemical Co., St. Louis, Mo. 1
National Lime & Stone Co., Findlay, Ohio 62
Nitrogen Division, Allied Chemical & Dye Corp., New York City ..... Front Cover
Phillips Chemical Co., Bartlesville, Okla. 32
Pittsburgh Agricultural Chemical Co., New York City ..... —
Potash Co. of America, Washington, D. C. ..... Third Cover
Raymond Bag Co., Middletown, Ohio 37
Sackett & Sons Co., The A. J., Baltimore, Md. 52, 53
Schmutz Mfg. Co., Louisville, Ky. 42
Shuey & Company, Inc., Savannah, Ga. 66
Southern States Phosphate & Fertilizer Co., Savannah, Ga. 66
Spencer Chemical Company, Kansas City, Mo. 20
Spraying Systems Co., Bellwood, Ill. 58
Stedman Foundry and Machine Co., Inc., Aurora, Ind. 62
Sturtevant Mill Co., Boston, Mass. 39
Summit Mining Corp., Carlisle, Pa. 57
Tennessee Corporation, Atlanta, Ga. 60
Texas Gulf Sulphur Co., New York City ..... —
Titlestadt Corp., Nicolay, New York City ..... —
Union Bag & Paper Corp., New York City ..... Second Cover
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla. 68
United States Potash Co., New York City 64
Wiley & Company, Inc., Baltimore, Md. 66
Willson Products, Inc., Reading, Pa. 59
Woodward & Dickerson, Inc., Philadelphia, Pa. 58

Can You Mix Them?

WHO stands to benefit from mixtures of fertilizers and pesticides for joint application?

What are the technical difficulties involved in the production of such mixtures?

Is the process profitable for the pesticide manufacturer? For the fertilizer manufacturer?

Is there an alternative to the mixtures?

These were some of the many important questions discussed last month by fertilizer and pesticide industry representatives, a control official and a leader in agricultural education.

The discussion took place at the NAC 20th anniversary convention in Spring Lake, N. J.

For the benefit of NAC members who heard the talks, but who want to study them more closely, and for members of the fertilizer industry who weren't in attendance, FARM CHEMICALS is printing this month complete text of all five reports given by the panel members. (See page 23).

A careful examination of these reports can help answer many of the questions that have been raised.

First of all, all the panel members at the NAC meeting agreed that the new material has distinct advantages to the farmer. He can make one application of both materials and save time and money in doing it. The process also eliminates handling of the materials and cuts down on the equipment requirements of the farmer.

But after once having agreed on this point, panel members and other interested persons attending the session didn't see eye to eye on many of the other factors involved.

Whereas nearly everyone can see how the pesticide industry can profit by the marketing of such products, few will concede (especially fertilizer manufacturers) that the fertilizer industry has anything to gain.

Charles T. Harding, of Virginia-Carolina Chemical Co., asserted that "as we see this situation, there are no advantages from the fertilizer industry standpoint."

He pointed out the difficulties in mixing the materials, the time required, multiplicity of grades, toxicity of pesticide materials and many other drawbacks.

C. C. Compton, of Shell Chemical Corp., saw things another way. Looking at the situation from several angles, he found advantages not only to the farmer, but to insecticide manufacturers, entomologists, equipment dealers and members of the fertilizer trade as well.

Of the latter group, Compton said "it seems to me the fertilizer manufacturer stands to be the big gainer in this new approach to insect control. Addition of insecticides to fertilizers offers a means of increasing fertilizer consumption."

Compton pointed out that the soil insecticides protect root systems and that this protection helps plants utilize plant foods.

From the viewpoint of the control official, there are scores of problems related to the labeling, licensing and application of fertilizer-pesticide mixtures.

BUT no matter what the difficulties may be on the production end, one thing is certain: many farmers want to use (and have been using) the mixtures on their farms.

Providing such mixtures is a service that no doubt will have to be made in large part by the fertilizer manufacturer because his materials form the overwhelming bulk of any mixture; the pesticide being only a minute percentage.

Perhaps the decisive factor in the situation, as one delegate commented at the NAC convention, is that if the farmer wants a service "he is going to get it."

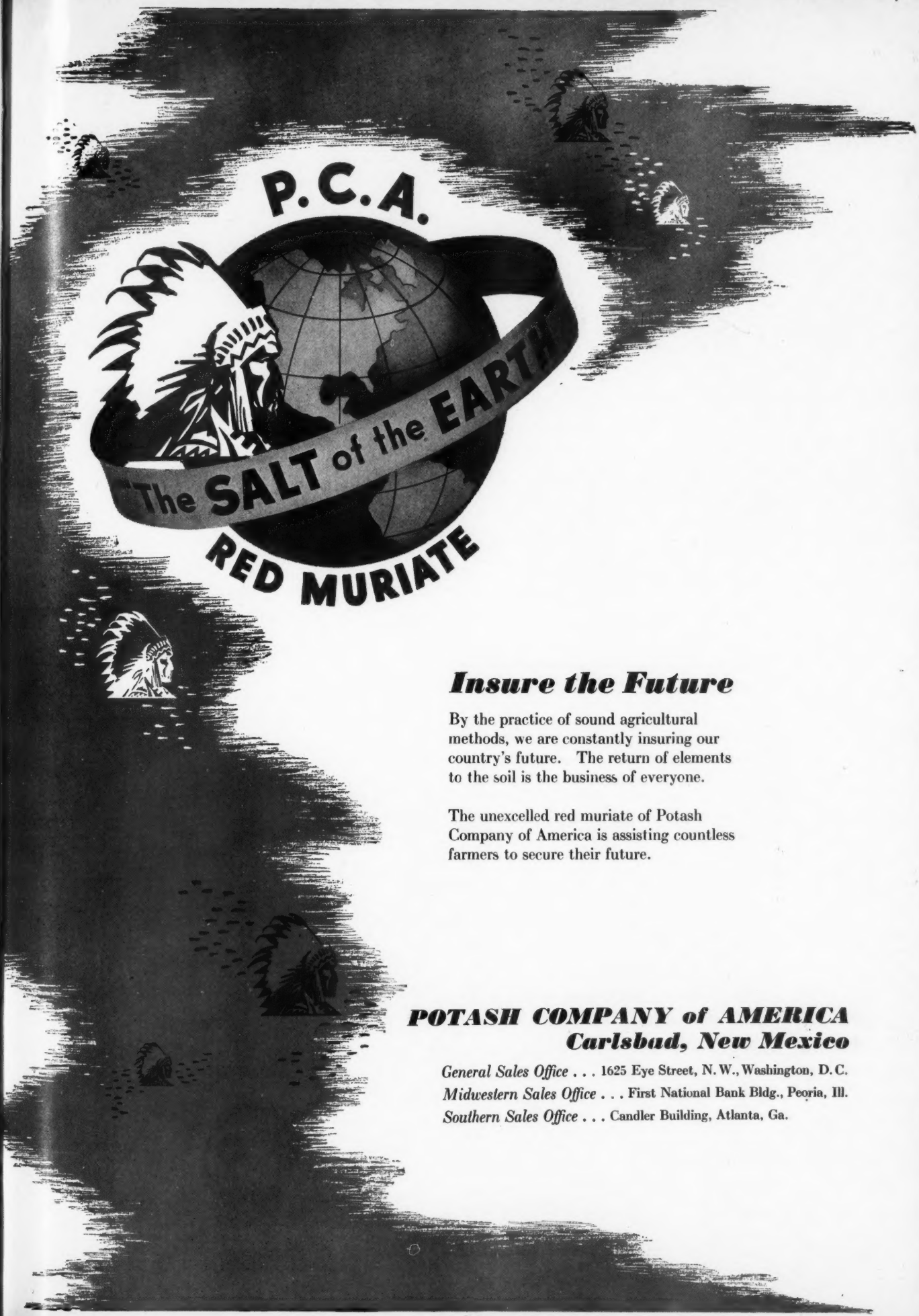
It may be that fertilizer-pesticide mixtures will have to be made at the dealer level to spare the manufacturer complex problems that would greatly affect his production schedule.

An alternative to the mixtures, the use of granular insecticides, which can easily be added to fertilizer by the farmer himself, probably will serve only to postpone the showdown.

Manufacturers of farm chemicals, who recognize already the advantages of the mixtures to the farmer, now must find means of making them available to him.

And, many leaders believe, the manufacturer not only will be providing a service, he will stand a very good chance of adding to his profits while doing it.

—HAMILTON C. CARSON



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